

# **Benefits of vocational education and training in Europe for people, organisations and countries**





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# Foreword

Vocational education and training (VET) produces many benefits at different levels. This publication summarises Cedefop's work on VET's benefits since 2008.

It focuses on VET, thus separating VET, where possible, from general education to identify its specific benefits.

It also looks at how VET generates its perceived benefits.

Findings are based not only on previous research, but also on new research and the evidence collected covers now more European countries. Besides economic benefits of VET, such as wages for individuals, improved productivity for organisations and more economic growth for countries, the analysis also examines VET's non-economic benefits, such as greater job satisfaction for individuals, lower absenteeism for organisations and less crime in societies.

Finally, this publication examines how VET's market and non-market benefits interact in organisations and how they can be maximised to improve productivity. It shows that to achieve competitive advantage, an organisation's VET policies and its wider human resource management practices must be consistent with how it competes in its markets.

In doing so, this publication seeks to inform decisions (and investments) on VET. The findings not only underline VET's importance for Europe's future as an instrument of economic and social excellence, but also may stimulate new considerations on how VET can help individuals and enterprises.



Christian F. Lettmayr  
*Acting Director of Cedefop*

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# Introduction

Constant improvement in the European workforce's skills is central to the Europe 2020 strategy for smart, sustainable and inclusive growth (European Commission, 2010a; 2010b). Improved skills are the basis for a lasting European economic recovery. They will help increase productivity and competitiveness of Europe's economies, as well as improve people's career and job prospects.

Education and training's central role in Europe's 2020 strategy (Council of the European Union, 2009) is acknowledgement of the range and importance of perceived benefits they can bring.

This publication attempts to improve our understanding of how benefits of education and training are generated, what they are and how to maximise them. In doing so, it hopes to influence how decisions are taken when investing in education and training and how to make the most of that investment. The publication also aims to inform work to improve VET through European cooperation under the Copenhagen process (Council of the EU and European Commission, 2010).

Chapter 2 considers how education and training develop people's capacities which when applied and used, generate benefits for individuals, organisations and economies and societies. The chapter argues that the focus so far has been on how education and training develop human capital. Insufficient attention has been given to how they can effect, for better or worse other types of personal capital (social, cultural and identity). The chapter argues that effectiveness of education and training, and consequently the extent of their benefits, depends not only on how they develop human capital, but interaction between all four types of personal capital.

The chapter goes on to discuss how far benefits associated with education and training are due to other factors; is someone wealthy because they are highly educated or highly educated because they are wealthy? The chapter reflects on this problem of cause and effect and looks at other limitations researchers face when trying to make accurate and useful assessments of the benefits of education and training. Chapter 2 also explores differences in benefits of VET compared to those of general education (which tends to

overshadow VET). New research commissioned by Cedefop is consistent with the view that VET broadly provides the same benefits as education.

A comprehensive review of VET's benefits is given in Chapter 3. It opens by discussing classification of VET's benefits into two broad types, private market and external non-market benefits. The chapter shows that VET generates a wide range of monetary and non-monetary benefits, including higher wages, better job prospects, better health and satisfaction with life and leisure for individuals; higher productivity and employee satisfaction for organisations; and higher economic growth and civic engagement for countries.

Chapter 3 also broadens the scope of the analyses of VET's wider benefits, which have tended to focus on Germany, the UK and US, by drawing from evidence from several European countries. The chapter discusses some external benefits of education and training, and that benefits for countries are larger than the sum of benefits for individual firms and workers. Overall, the wide range of benefits generated demonstrate VET's dual role, in contributing to economic excellence and social inclusion.

Another original element of Cedefop's work is that Chapter 4 extends the analytical framework of VET benefits for organisations. It examines how investment in education and training is turned into various market and non-market benefits for individuals, the economy and society largely in organisations.

Most research on benefits of education and training has focused on specific relationships, for example education and training's impact on wages, or productivity, or health. Similarly, research often focuses on average returns on investment in education and training. However, in organisations benefits from VET interact and mutually reinforce each other. Organisations, like societies, are communities. They provide an environment in which direct and indirect (those arising through social interaction) benefits of education and training can bring out the workforce's full potential. For example, VET can raise workers' skill levels and directly contribute to higher productivity. However, it can also indirectly improve productivity by increasing workers' job satisfaction and wellbeing and encouraging cooperation in the organisation.

Such wellbeing benefits from education and training have been analysed for individuals and societies, but much less so for organisations and the work environment. Chapter 4 looks at this issue and develops the theoretical framework for considering how VET can directly and indirectly improve productivity, innovation and competitiveness. A wider appreciation of how VET's benefits operate may influence an organisation's decisions to invest in it.

Chapter 4 goes on to discuss the conditions that need to be in place to maximise VET's benefits in the organisation. It shows that characteristics of trainees, the training and the organisation can all influence VET's impact. It also emphasises the importance of integrating VET into the broad range of human resource management practice in organisations. More broadly, it is also important that training is integrated into national and regional industrial policies to promote economic development.

Chapter 5 reviews findings of this analysis. It concludes that many of VET's benefits, in some cases perhaps the most important, are intangible and difficult to express in monetary terms. Consequently, organisations (as well as individuals and governments) may fail to account for them properly in any cost-benefit analysis underpinning their decision to invest in training. When considering returns on investment in VET, investors should consider a broader framework that takes VET's market and non-market benefits into account. Such an approach may influence the expected value of the investment in VET and so the propensity to invest in it. The chapter argues that taking full account of all of VET's benefits is particularly important for organisations that want to compete based on high quality, high value-added goods, and where skills and attitudes need to combine to bring success.

Finally, the chapter contends that despite their importance, the range of VET's benefits and how they interact and, consequently, VET's role in delivering excellence are not sufficiently understood.

# How benefits are generated by education and training

## 2.1. Introduction

Before discussing benefits of education and training it helps to take a few steps back.

Insights into how education and training develop people's capacities can improve our understanding of the benefits they can bring. This chapter, therefore, begins by looking at how education and training shape people's abilities by developing different types of personal capital. Further, to assess benefits of education and training realistically, some idea is needed about other factors' influence. This chapter looks at cause and effect and problems of establishing how far benefits are a result of education and training or other things.

Perceptions of general education and vocational education and training (VET) also provide useful background in considering their respective benefits and this chapter discusses differences between benefits from general education and those from VET.

## 2.2. Education and training: developing human, social, cultural and identity capital

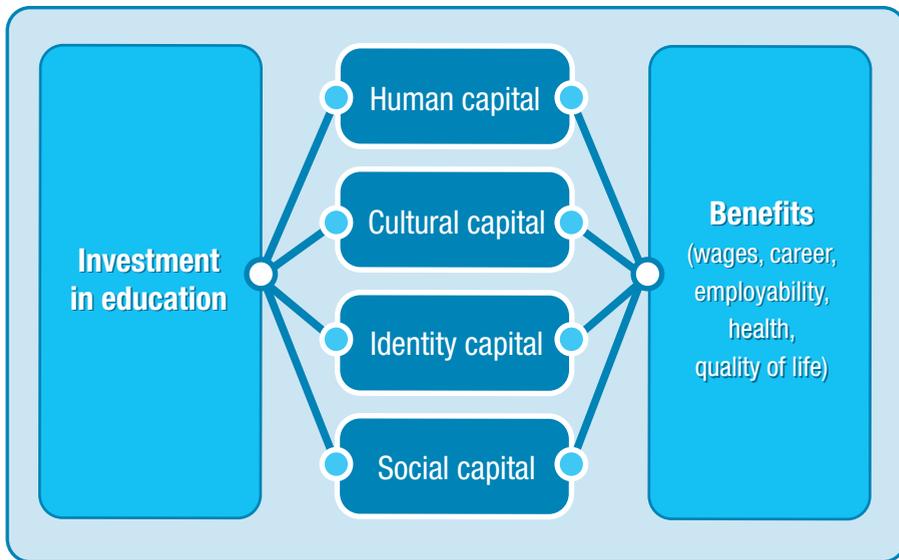
Education and training affects four types of personal capital: human, social, cultural and identity capital (Côté, 2005; Desjardin, 2008; Feinstein et al., 2009) (Figure 1).

Human capital is the most widely known. It is the stock of knowledge, skills and competences a person has, which affect readiness to perform productive labour all of which can be developed by education and training. Human capital can depreciate when knowledge, skills and competences become obsolete, for example, due to technological development (Becker, 1964; Hartog and Oosterbeek, 2007; OECD, 2010a).

Social capital is the value of social relations or networks, cooperation and trust (Huang et al., 2012,forthcoming). It also includes perceptions about a person’s own value to an organisation (Sarracino, 2010). There are three types of social capital:

- (a) bonding – social networks between identical groups of people;
- (b) bridging – social networks between heterogeneous groups;
- (c) linking capital – connections with people in power, including vertical connections to formal institutions.

Figure 1. **Developing capital to produce benefits**



Source: Cedefop.

Social capital can be developed through education and training to produce individual and collective results, such as improving someone’s civic behaviour and, more broadly, safer societies. Social capital can also improve economic performance by encouraging trust (Huang et al., 2009). Increases in social capital have a positive impact on wellbeing in most cases (Sarracino, 2010) <sup>(1)</sup>. But social capital can depreciate, for example, when job loss makes networks of former colleagues obsolete. Learning choices can destroy bonding and

<sup>(1)</sup> Sarracino also shows that in some institutions, such as the church and the army, increases in social capital are not so positive for wellbeing.

bridging social capital (Putnam, 2000). For example, someone from a poor socio-economic background may wish to go to university to improve their human capital. However, they may encounter hostility from members of their community.

Cultural capital comprises non-financial social assets which may be educational or intellectual advantages. Cultural capital develops over time and can be consciously acquired and passively 'inherited' through socialisation. It affects character and ways of thinking. It is a means of communication and self-presentation acquired from the surrounding culture. Education can generate externalities as developing someone's cultural capital may influence educational choices of their children (Bourdieu, 1977; 1986, Weininger, 2005).

Identity capital is the intangible resource in which people 'invest' to become 'who they are'. It includes psychological factors such as self-confidence, self-efficacy, cognitive flexibility and complexity, self-monitoring, critical thinking and morals. Through these and other character attributes people understand and negotiate social, occupational and personal obstacles and opportunities. Identity capital is formed by psychosocial skills, which are largely cognitive and appear necessary to devise intelligent strategies and make decisions. Education and training can affect life and job satisfaction and health by improving identity capital and enabling individuals to play a more purposeful role in society. Labour market transitions (supported or not by investment in education) can make identity capital obsolete if a new industry or occupation requires people to construct a new image of themselves better suited to new circumstances (Côté, 2005). Different types of personal capital do not develop in isolation. Extent of the benefits generated by education and training seem to be linked to interaction between the four types of personal capital. Importantly, different types of personal capital do not develop equally, simultaneously or always positively. Opportunities for higher wages from increased human capital may not be taken due to an individual's attitudes and behaviour (identity capital). Although capable, someone may turn down promotion because of peer pressure (social capital).

We need to improve our understanding of theories governing interactions between the four types of personal capital. This will enable us to take better account of the overall benefits of investment in education and training, how they are delivered and the conditions in which they can be effectively realised.

## 2.3. Education and training: cause or effect?

Measuring benefits of education is fraught with difficulties, not least because of the problem of cause and effect.

Causation is difficult to establish. First is the problem of omitted variables where benefits of education and training may be due to something unobserved (Stowasser et al., 2011; Brunello et al., 2011). For example, empirical analyses on wage returns to education usually use data from which it is possible to derive someone's human capital from the highest level of formal qualification they hold. However, formal qualifications do not necessarily reflect all of someone's abilities which will comprise their human and social, cultural and identity capital. Some workers may earn higher wages because they are more able rather than their level of education or training. Another example is unobserved attitudes toward risk, a major influence on decisions to invest. Someone risk averse may prefer to work rather than leave a job and go to university, despite the prospect of earning higher wages in a better job (Oreopoulos, 2007).

The second problem is reverse causation where the perceived benefits affect the education and training level rather than the contrary. For example, some studies show the more highly educated people are the better their health tends to be (Groot and Maassen van den Brink, 2007). However, healthy people may be more likely to invest in education. Better health implies a longer working life and more chance to recoup the investment.

The third problem is the 'inception' period, namely the time lag between participation in education and training and realising the benefits. Studies based on longitudinal data sets find consistent time lags before returns to education and training materialise. Studies failing to find positive effects of education and training may be looking at a time period that is too short. Lifelong learning and adult education bring similar benefits to education (Field, 2009), but omitted variables and reverse causation are more difficult to measure, because the time between the decision to participate in adult education and measuring the outcome is often quite short.

Researchers are aware of these pitfalls. Effects of omitted variables appear small when considering wages (Hartog and Oosterbeek, 2007; Psacharopoulos and Patrinos, 2004), but they may be important for different types of benefits. Estimation bias may also be negligible because the highest level of educational achievement is generally reached in early adulthood and remains relatively stable, while the wider benefits materialise years later (Groot

and Maassen van den Brink, 2006). Statistical techniques using panel data can also minimise effects of unobserved characteristics not changing over time. In examining impacts of education and training on life outcomes, such as health, research can look at changes driven by external factors, such as increasing the minimum compulsory education level. This makes participation in education no longer a personal decision and effects of unobserved variables on the outcome being analysed, such as health, is neutralised <sup>(2)</sup>. Another way to control for unobserved variables is to use samples of twins. A US study of twins found that education, especially a high school diploma, has a positive effect on self-reported health, chronic conditions and exercise behaviour (Lundborg, 2013).

Despite these methodological strategies, it is difficult neatly to separate cause from effect. Some benefits of education and training will always be due to factors not considered by the research (Schnittker and Behrman, 2012), but despite flaws in any piece of research there is substantial evidence of the many and varied benefits of education and, in particular, VET (Chapter 3).

## 2.4. Benefits of general education versus vocational education and training

From a policy viewpoint, to make wise investment in education and training it is useful to know if different types of learning bring different benefits. However, it is surprisingly difficult to distinguish between various types of education. Even a 'simple' distinction between VET and general education is difficult to apply. Lack of adequate data is one problem. Many data sets contain information on educational levels using the international standard classification of education (ISCED), but orientation of the study, general or vocational, is rarely recorded <sup>(3)</sup>. Consequently, little attention is paid to whether the benefits differ between general or vocational education.

Economic theory, at least for wages, argues that there is no reason why benefits from the two types of learning should be different (Box 1). It assumes well-functioning labour markets where employers know about different types

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<sup>(2)</sup> Estimates based on this approach can be imprecise because they can only use the external variation in schooling (Jürges et al., 2013).

<sup>(3)</sup> The ad hoc module of the 2009 labour force survey is a recent exception.

of qualifications and which are most relevant for them. This is not always the case, especially when new qualification frameworks are put in place (Wolf, 2011) <sup>(4)</sup>. However, even though labour markets are not perfect, there is evidence that workers sort themselves across different learning tracks in ways that best suit their abilities and lead to higher wages (Meer, 2007). Consistent with this, VET students appear to derive little or no benefit from extending their studies with additional general education (Oosterbeek and Webbink, 2007).

**Box 1. The economic case for equal returns on wages from general education and vocational education and training**

Economic theory argues that with well-functioning labour and product markets, returns on investment in general education and VET should be the same, at least in terms of wages.

For example, assume there are two learning styles; learning by doing (VET) and learning by studying (general education) and that people are predisposed towards one or the other. For people better at learning by doing VET is more appealing as it is their natural learning environment and more cost-effective in terms of effort.

VET and general education can also be seen as producing different skills. VET produces manual and general education cognitive skills. Individuals again may have a preference for developing different types of skills. Dexterous people find it relatively easy to develop manual skills and cognitive people cognitive skills

If enterprises are free to choose and change production technology in response to relative availability of the two types of skills, they will choose the technology that equalises the marginal rate of substitution between the two. In other words, the wage earned by people who studied VET will be equal to that earned by individuals who studied general education, making the returns on investment equal.

*Source: Cedefop.*

<sup>(4)</sup> This lack of knowledge could be linked to lack of returns on newly-introduced VET qualifications in the UK (Wolf et al., 2006).

Cedefop's study (Cedefop 2011a) on VET's effects on wages and employment status supports this view. The study analysed various comparable data sets from different European Union (EU) Member States. It found returns to various forms of education and types of occupational career paths (of equal length) are generally similar. The study also found that initial VET (taking place before entry into the labour market), general education and employer-provided continuing VET have a positive effect on the likelihood of someone finding and keeping a job.

Research indicates that VET and general education tend to be equally effective in generating all types of benefits (Bartlett, 2009). Concerning wider benefits such as more developed civic competences, better health and less crime, there is evidence that the impact of initial general education and lifelong learning are almost identical (McMahon, 1997; 1998). Given that much of lifelong learning is continuing VET, suggests that returns on initial general education and continuing VET are equal.

Given that differences in returns on investment of equal duration in general education and VET appear small, there are good grounds for research not differentiating between them. However, more focus on VET's specific effects is justified. Its perceived status is low (Billet, 2011; OECD, 2010b). It has received little attention in reforms to education and training systems across Europe (Wolf, 2011). There is also a need to balance investment across various forms of education and training.

Further, although the impact of the two types of learning pathways on wages appears similar, there is evidence that earning patterns are different. Returns on education follow a well-established life course pattern (Hanushek et al., 2011; Cedefop 2012a). However, returns on initial VET tend to be larger at the beginning of careers. In the first years of labour market experience, VET qualifications lead to higher wages compared to qualifications from general education. After a few years the relationship is reversed and those with general education qualifications tend to earn higher wages than their counterparts with VET qualifications. This indicates that while VET may confer an advantage at the stage of initial transition to the labour market, general education graduates are able to catch up and even overturn their initial disadvantage, most probably due to their having more transferable skills. This makes a good case for stronger emphasis on transferable key skills in VET.

General education and VET may also have different benefits depending on how they influence interaction of the four types of personal capital (Section 2.2). For example, VET may generate stronger, but fewer bonds with colleagues in organisations. General education may generate weaker

relationships but a larger contact network inside and outside the organisation which could improve overall job opportunities (Granovetter, 1974).

In short, VET and general education tend to be equally effective in generating all types of benefits. More importantly, this implies that, in economic terms, VET and general education are complements rather than substitutes (Lazear, 2009).

VET's relatively poor parity of esteem compared to general education is not justified based on the empirical evidence presented here. The debate whether general education or VET is better, is not about the benefits they bring, but about which learning track provides the best return on investment for the individual or organisation at a particular point in time.

## CHAPTER 3

# Benefits of vocational education and training: an overview

### 3.1. Introduction

Research on education and training, usually measured in years of study or by level of attainment has found many positive effects for individuals, organisations, the economy and society (Vila, 2000; 2005; Feinstein et al., 2008; see also Box 2). As far as possible, this chapter looks specifically at benefits of VET rather than education and training as a whole. The findings are based on a comprehensive review of previous research in this area, complemented by Cedefop's own research.

#### Box 2. **Sample of studies finding positive effects of education and training**

- Higher wages (Badescu et al., 2011; Hartog and Oosterbeek, 2007; Heinrich and Hildebrand, 2005).
- Better employment prospects and increased ability to retain the current job (Dorsett, et al., 2010; Dickson and Harmon, 2011; Dickson and Smith, 2011).
- Reductions in crime (Lochner, 2011).
- Development of civic competences (Hoskins et al., 2012; Schnittker and Behrman, 2012).
- Better functioning democracies (Hoskins et al., 2008).
- Better health (Feinstein et al., 2006; Cutler and Lleras-Muney; 2008; 2010), especially as far as mental disorders are concerned (Field, 2009), lower mortality among elderly people (Lleras-Muney, 2005; Van Kippersluis et al., 2011), and improved health-related behaviour (Lochner, 2011).

The chapter begins by examining how VET’s various benefits have been classified into two broad types, namely private market and external non-market benefits and the different levels at which they accrue. The chapter then goes on to review evidence of how individuals, organisations, economies and societies profit from the two types of VET benefits.

### 3.2. Types of benefit: market and non-market

McMahon classifies the wide range of benefits of education (McMahon, 2004) and lifelong learning (McMahon, 1998), into two types; market and non-market benefits, both of which can be either private or external (Figure 2).

Figure 2. **Examples of types of benefits of education and training**

	Private benefits	Externality, social benefits
<b>Market</b>	Market (monetary) benefits, higher wages, better job prospects	Externalities on GDP per capita faster rate of technological adoption
<b>Non-market</b>	Non-market (non-monetary) benefits, greater self-confidence, better health longevity	Externalities on non-market benefits, better parenting, higher education of children, lower morbidity
<b>Non-market</b>	Public good externalities (non-rivalry effects) reduced crime, improved civic behaviour	

Source: McMahon (2004).

Private market benefits are delivered through the labour market and include higher wages and better employment prospects. Private non-market benefits are enjoyed by individuals, but are not provided through the labour market, but may nevertheless be influenced by a person’s job and work environment. They include longer lives, more satisfying leisure time and better parenting which can lead to higher levels of education for children.

External market benefits are often indirect results of economic activity by organisations <sup>(5)</sup>. For example, a better educated workforce can make organisations more innovative through developing new technologies or adopting them more rapidly, but it can also lead to faster GDP growth nationally. External non-market benefits are generally found at societal level and are 'public' as an individual enjoying such benefits does not decrease their availability to others. Examples are greater civic responsibility which can lead to stronger and more stable democracies. Externalities can be static, such as a one-off increase in output due to a rise in the average level of education, or dynamic where, for example, greater innovation due to a rise in the average level of education raises the general growth rate. Evidence indicates that dynamic externalities are more important, but it is not yet conclusive (Lindhall and Canton, 2007).

Externalities mean that the total benefits accruing to a society are greater than the sum of the benefits accruing to individuals. For example, if someone engages less in criminal activity, society as a whole benefits. However, not all externalities are positive. For example higher investment in children's education is linked to low fertility which, coupled with increased longevity, may lead to an older population and increased pressure on health and welfare services.

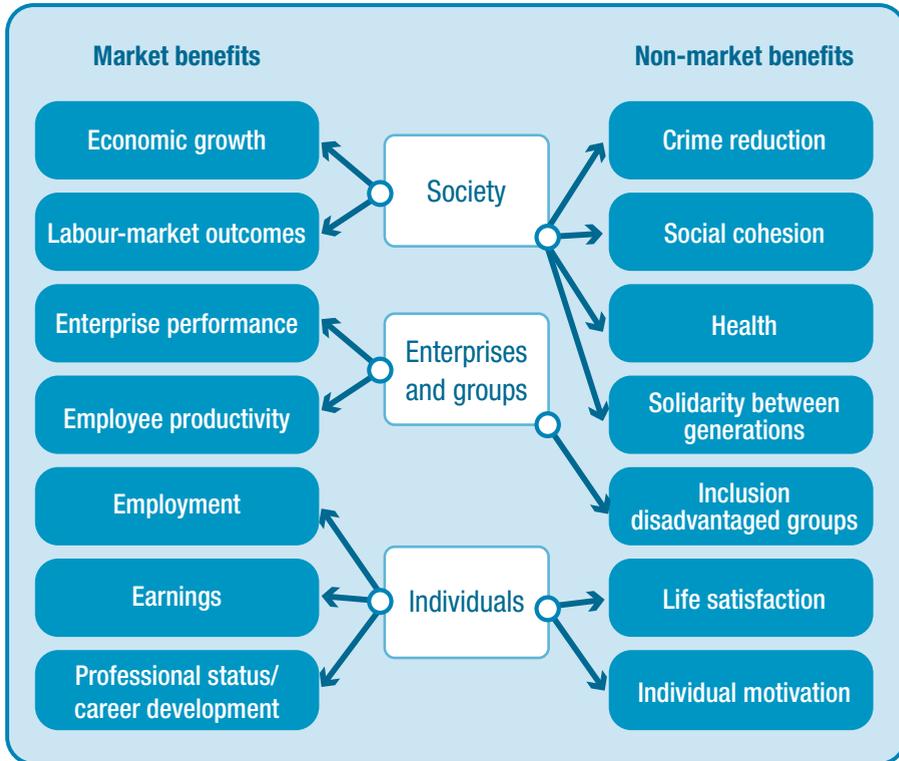
Both market and non-market benefits of education and training accrue to individuals, enterprises and groups and to society as a whole (Figure 3).

Lack of knowledge about VET's specific benefits compared to general education is partly due to technical reasons. VET is far more diversified than general education. Roles of public and private sectors, government, social partners and business vary considerably across countries. Delivery of VET is also more varied. VET can be initial or continuing, formal or informal, classroom- or workplace-based, or both. This complicates collection of data which are at the centre of research and comparison of findings across studies. Data limitations can make it difficult to draw firm conclusions. Some studies contradict findings of others, although these can often be explained by differences in what benefit is being measured and at what level.

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<sup>(5)</sup> An externality is an effect of a decision by one set of parties on others who were not involved in the decision, had no choice and whose interests were not considered.

Figure 3. **Beneficiaries of education and training**



Source: Cedefop.

While most studies do not distinguish between education and training, treating them as a single homogeneous good, Cedefop has attempted to identify specific benefits of VET (initial and continuing). Although VET's organisation and status varies widely across Europe, research indicates that VET has the potential to generate numerous economic and social benefits common to all countries.

### 3.3. Market benefits of VET

#### 3.3.1. Market benefits for individuals

The main private market benefits of education and training for individuals are higher wages (Badescu et al., 2011; Hartog and Oosterbeek, 2007; Heinrich and Hildebrand, 2005) and improved job and career prospects, also known as employability (Dickson and Harmon, 2011; Dickson and Smith, 2011; Dorsett et al., 2010).

Evidence that initial education increases personal income is available from many studies covering many years and from over 100 countries with different cultures and economic systems (Denny et al., 2004) <sup>(6)</sup>. For continuing VET, research surveyed has focused on remedial government-paid off-the-job training programmes and employer-paid training.

Evidence on remedial training, largely for unemployed or long-term unemployed people, suggests only limited success (Heckman, 2008; Heckman and Jacobs, 2011). Some studies show that labour market training programmes can raise wages, while others show their effects to be insignificant. Given diversity of such programmes and their target groups, it is unsurprising that results are mixed. However, there is considerable evidence that employer-paid continuing VET does raise wages.

In contrast to homogeneity characterising wage returns on initial education, there is no sign that returns on VET are harmonised across countries. Large positive effects on wages have been found in the UK (Arulampalam et al.; 1997; Blundell et al., 1999; Dolton et al.; 1994). Studies for other European workers are more mixed, but still typically positive. Groot et al. (1994) and Björklund (1994) find large positive effects for Dutch and Swedish workers respectively, but Pischke (2001) finds substantially smaller effects for German workers. Westergaard-Nielsen (1993) and Goux and Maurin (2000) find effects close to zero for Danish and French workers respectively. However, the French study also notes that training seems to extend job tenure, consistent with the idea that the employer is funding organisation-specific training which may lead to higher wages in the longer term. Unsurprisingly, returns on training have also been found to be higher when a qualification is obtained (Brunello et al., 2012; Dorsett et al., 2010).

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<sup>(6)</sup> There is also evidence that in certain situations investment in a few qualifications appears not to pay off (De Coulon and Vignoles, 2008; Klein and Vella, 2006; Pischke and von Wachter, 2008; Saniter, 2012).

Country reports compiled by Cedefop on benefits of VET (Cedefop, 2011b) provide some additional evidence. Danish studies found that adult education and further training have a positive impact on participants' professional lives. Studies in the Netherlands found that staff participating in continuing VET earned between 3.3% and 15.7% more than those who did not.

To develop work on specific benefits of VET for individuals, Cedefop launched a quantitative analysis using various comparable data sources <sup>(7)</sup> covering 15 EU Member States <sup>(8)</sup> (Cedefop, 2011a). Using qualification levels and adjusting them to account for years of education needed to attain them to make measurement of skills development broadly comparable <sup>(9)</sup>, Cedefop's analysis found that returns on additional years of schooling leading to VET qualifications beyond secondary level <sup>(10)</sup> to be around 7% <sup>(11)</sup>, similar to returns on an extra year of tertiary education (Denny et al., 2003; European Commission, 2005; von Middendorf, 2008). This finding should be qualified because patterns of earnings for general education and initial VET graduates seem to be different (Section 2.4). There is also considerable diversity across countries on when students pass from one level of learning to the next. It also appears that benefits will not accrue to all individuals to the same degree. Weaker and marginalised groups are at risk of being unable to participate in VET.

Cedefop's study also looked at returns on training. The initial VET concept was extended to include participation in training soon after compulsory schooling (up to age 25). Continuing VET is defined as periods of learning at work after completing initial education or VET to acquire generic, but labour-market-related or job-specific skills.

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<sup>(7)</sup> The EU labour force survey (LFS), the international social survey programme (ISSP), the statistics on income and living conditions (SILC) and the European Community household panel (ECHP). All sources had limitations that hampered analysis. Only ECHP data were sufficiently detailed to allow broad conclusions to be reached.

<sup>(8)</sup> Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden and the UK.

<sup>(9)</sup> Although time between participating in VET and realisation of benefits can be very long, available data only allow benefits to be calculated over short time periods.

<sup>(10)</sup> Comparison between wage returns on general education and initial VET are obtained by comparing the wage premium at ISCED level 3 to those at ISCED level 4 (a very heterogeneous category but the closest approximation to a vocational orientation possible in the SILC data set) and those of higher education (ISCED levels 5 and 6), although for some countries these categories also include vocational qualifications.

<sup>(11)</sup> These results refer to average returns on education in Europe, obtained from ECHP and SILC data. There is substantial variation in the returns across countries in the ECHP (Heinrich and Hildebrand, 2005) and SILC (Badescu, et al., 2011). Attempts to link these differences to institutional diversity have been unsuccessful. There is also considerable heterogeneity in returns on education across individuals.

Unlike other studies, Cedefop's analysis considered interaction between general education and both initial and continuing VET, reflecting the idea that skills are built through relationships between different types of personal capital, or qualities and not acquired in isolation (Section 2.2). Consequently, foundations provided by VET or general education are important for how effectively new skills, developed through continuing VET, are used. Cedefop's analysis found continuing VET to have positive effects on wages and employment. Accounting for its short duration, on average 17 weeks, annual returns for continuing VET are around 10% for men and 7% for women. Returns on workplace training also seem in line with those for general education. Similar results have been found in the US with rates of return on investment in training of around 9% across various occupational career paths (Freeman and Hirsh, 2001).

These returns are short-term gains arising within a year of participating in training. Earlier training episodes (up to four years previously) were found to have a stronger impact on wages than training in the current year and that returns tend to be consistent over time.

Cedefop's findings should be treated with some caution. Rates of return on continuing VET may be biased upwards because more able people are most likely to participate in it. Part of the return (as discussed in Section 2.3) is due to individual ability rather than training (Görlitz, 2011; Heckman, 2000; Jenkins et al., 2003; Leuven and Oosterbeek, 2008).

### 3.3.2. Market benefits for organisations

Economic theory predicts that organisations investing in human capital (continuing VET in this case) should perform better. This is borne out by a meta-analysis of 66 US studies (see Crook et al., 2011) which found training to be related to performance measures, especially operational measures, such as customer satisfaction, employees' performance, or innovation. With these sorts of measures it is easier to assess training's impact. VET's impact of training on profitability is less clear. Training may increase productivity, but also wages at the same time. If wages rise faster than productivity, profitability will fall <sup>(12)</sup>.

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<sup>(12)</sup> Productivity is measured as value added per worker. Value added consists of profit and wages. Training increases both wages and productivity. The net result depends on the bargaining power of claimants: organisation claiming profits and workers claiming wages.

For Europe there is considerable evidence that firms investing in adult learning increase productivity. Studies in Austria, Denmark, Norway and Sweden have also found a positive link between continuing VET and improved organisational productivity and technological innovation (Cedefop, 2011b).

Cedefop furthered the analysis by reviewing 62 studies on the empirical relationship between employer-provided training and productivity gains (Cedefop, 2011c). The review was complicated because organisations and researchers measured training in many different ways: in terms of training expenses (as a % of labour costs), in terms of training incidence (share of employees who participated in training), or in terms of whether the organisation trained or not. This characteristic strengthened the study. Regardless of the measure used to gauge training provision, training was found to have a positive impact on performance (Cedefop, 2011c) <sup>(13)</sup>.

How much organisations benefit from continuing VET depends on several factors. These include characteristics of the organisation, training and trainees, the resources allocated and how VET is integrated with other human resource practices. The relationship between these factors and their influence on how organisations can benefit from continuing VET is discussed in Section 4.3.

### 3.3.3. Market benefits for countries

Many studies find a strong relationship between human capital stock and GDP per capita growth (Barro and Lee, 1993; Benhabib and Spiegel, 1994; Barro, 1998; Hanushek and Kim, 1995; Gemmell, 1996; Bassanini and Scarpetta, 2001; Keller, 1996; Cohen and Soto, 2007). However, very few analyse how different levels of education, for example higher education or different types of general and vocational education, contribute to economic growth.

Research on human capital's impact on national economic performance invariably meets the problem that, as intangible assets, skills are difficult to measure. Education output measures of human capital, such as formal qualifications, are generally preferable to input measures such as years of education. Formal qualifications capture something of what has been learned, rather than just attendance. However, both measures ignore skills that are not formally certified. The issue is central as measurement error has been cited as a reason why earlier studies found that increases in educational attainment had little impact on growth (Krueger and Lindahl, 2001).

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<sup>(13)</sup> Most studies do not record the type of training. Cedefop's literature review (Cedefop 2011c) found only five studies explicitly examining initial VET's effects on organisation performance (Baker and Thompson, 1995; Leiponen, 2000; Jones, 2001; Hempell, 2003; Zwick, 2007). Evidence points to a positive effect, but it is limited and weak.

Consequently, Cedefop launched research to identify macroeconomic benefits of VET by developing a new skills measure that takes account of certified and uncertified skills and complementarities between them for seven Member States <sup>(14)</sup> – Denmark, Germany, Spain, France, the Netherlands, Sweden and the UK (Cedefop, 2012b). The study analyses relationships between labour productivity levels (value added per employee) and different types of skill. These are defined by stock of workers with various initial VET and general education qualifications at various ISCED levels, complemented by stock of continuing VET (taken from the labour force survey). The seven countries were chosen for their diverse VET systems. Some, such as Germany, have highly developed apprenticeship training, others, such as Sweden provide VET through full-time vocational schooling.

At national level, growth accounting analysis suggests that, in most of the seven countries, the most significant skills contribution to labour productivity growth between 1980 and 2007 came through total factor productivity growth and capital accumulation followed by build-up of skills, most importantly higher-level skills (bachelor degree and above, ISCED 5a to 6). However, in six of the seven countries, upper-intermediate (technician level, ISCED 4 and 5b) and lower-intermediate (craft level, ISCED 3A and 3B with vocational orientation) vocational skills also made positive contributions to labour productivity growth in some time periods. The exception is Germany where the lower intermediate vocational employment share was already high in 1980 and has not grown much since. In Denmark and the Netherlands, accumulation of lower intermediate vocational skills contributed more to growth in the 1980s and 1990s than higher qualifications. University-level skills, many of which are vocational, have a positive impact on average labour productivity in countries like France and the UK, where the dual system is less developed.

Growth accounting-based estimates may significantly underreport macroeconomic effects of skill accumulation as they do not reflect their impact on technological progress. A strong skills base may generate technological developments or promote adoption of new technologies by increasing absorptive capacity (which is improved by intermediate and vocational skills). Krueger and Kumar (2004) found that while higher education can increase innovative capacity, investment in VET can improve a country's capacity to

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<sup>(14)</sup> For these countries it was possible to use EU labour force survey data to develop a long enough time series (20 years) on stock of vocational skills, using ISCED qualifications and their academic or vocational orientation.

implement innovation. Cedefop's study on VET's macroeconomic benefits (Cedefop, 2012c) also found that a country's propensity to build vocational skills has a positive effect on its ability to innovate as measured by the European innovation scoreboard.

At macroeconomic level skill accumulation appears to improve productivity not only of individuals directly concerned, but also other members of the workforce, who benefit from 'spillovers', for example, knowledge passing between colleagues (Section 3.4.2). Consistent with this view, the study found significant complementarity between high- and intermediate-level vocational qualifications in most of the seven countries, underlining that skills are built and not learnt in isolation.

To achieve higher productivity countries need both high- and intermediate-level vocational qualifications. One skill type is not more effective than the other; both are needed to generate higher productivity.

For example, a one percentage point rise in lower intermediate vocational skills combined with a one percentage point rise in upper intermediate skills (both provided through initial VET) is estimated to have increased trend productivity in Spain and the Netherlands by 3.5 to 4%. In terms of GDP growth, estimated effects of similar increases in lower intermediate and upper intermediate skills provided through initial VET are highest in Germany and Spain, with GDP rising by about 1.5 to 2.5%. They are lower in Sweden and the UK, where output increases by about 0.75%. Skill increases also tend to reduce unemployment.

It seems likely that economic returns on different skill mixes and different types of skill acquisition vary sharply between sectors as well as countries. Differences in national productivity performance may be driven to some extent by different combinations of sector specialisation and skill use. For example, technician-level vocational skills provided through initial VET have a positive impact on productivity across the board. Impact tends to be stronger in countries with a well-established apprenticeship system and when skills are broadly defined to include non-certified skills provided through continuing VET.

According to Cedefop's study complementarity between intermediate vocational skills and high-level skills seems higher in manufacturing sectors of countries with apprenticeship-based systems. This could reflect key support roles for technicians in product design and development areas and for craft-skilled workers in improving production processes. Such complementarity is not observed in production sectors of countries where VET systems are largely classroom-based (where the high-skilled account for a significantly larger share of production costs), nor in services.

In conclusion, it appears that, for productivity, general and vocational skills are complements rather than substitutes, implying that continuing VET is also complementary, reinforcing skills formed through initial VET.

## 3.4. Non-market benefits of VET

### 3.4.1. Non-market benefits for individuals

Many empirical studies show that education, or schooling, brings non-market benefits for individuals. For example, it can develop civic competences (Hoskins et al., 2012; Schnittker and Behrman, 2012), better health (especially concerning mental disorders) (Field, 2009) and improved health-related behaviour (Lochner, 2011). The OECD (2009) examined the relationship between education and three social outcomes – self-assessed health, political interest and interpersonal trust – for 20 countries. The findings suggest a strong correlation between higher levels of education and better outcomes in these three areas. Non-market benefits of continuing VET tend to be stronger for less-well educated people (Jenkins et al., 2003).

To examine more closely VET's non-market benefits, Cedefop launched a study to test empirically social benefits of initial and continuing VET in Europe (Cedefop, 2011e). The study also examined how national contexts may influence non-market benefits of VET being realised.

The study found that for people across Europe, initial VET (training undertaken below age 25) is linked to better health (measured by indicators such as self-rated health and lack of chronic health conditions), membership of organisations and job satisfaction. Integrated initial VET systems, such as those in Finland and Sweden that regard VET and general education as equal, both as educational options and as routes of access to higher education, seem to have a positive effect on individual wellbeing.

Initial VET is linked to increased membership of voluntary organisations in countries where participation in civil society is rewarded, such as in Denmark, Germany, Luxembourg and Austria. The study also found links between initial VET and job satisfaction in southern European countries, such as Greece, Spain, Italy and Portugal and countries with highly-developed apprenticeship systems and well-structured regulated initial VET, such as Denmark, Germany, Luxembourg and Austria.

There are strong associations between continuing VET and positive social outcomes in Finland and Sweden. This may highlight the effect of a holistic approach to human capital development, for example combining improvements in working conditions with VET to maintain high productivity. Such an approach appears increasingly important as the workforce ages. There is also evidence of a positive relationship for individuals in Greece, Spain, Italy and Portugal between continuing VET and membership of voluntary organisations and higher job satisfaction. However, in these countries, with except for Portugal, continuing VET did not seem to have any positive effects on health.

For individuals, non-market benefits are commonly measured by positive psychological effects on individuals' motivation or attitudes, such as increasing self-esteem and self-confidence, especially among unemployed people. For those in work, job satisfaction tends to be positively and significantly influenced by opportunities for career advancement and access to learning opportunities (Section 4.2).

### 3.4.2. Non-market benefits for organisations

There are several non-market benefits for organisations investing in continuing VET. A long history of research shows investment in human capital can reduce labour turnover (Becker, 1964; Bishop, 1991; 1994; Krueger and Rouse, 1998) and absenteeism (Krueger and Rouse, 1998; Ghebregiorgis and Karsten, 2007). Parsons (1972) found investment in organisation-specific human capital reduced redundancies and voluntary exits. Smith and Hayton (1999) found that VET can reduce labour turnover by increasing employee commitment to the organisation. The link between continuing VET and reduced labour turnover holds true across diverse countries, for example the US (Veum, 1997), Switzerland (Zweimüller and Winter-Ebmer, 2000) and Japan (Higashi, 2002).

Kenyon (2005) cites lower labour turnover among apprentices due to higher job satisfaction among benefits for organisations investing in apprenticeships. Other benefits include: providing a cadre of employees from which to select future managers, producing fully-trained workers steeped in values of the business and improving the organisation's reputation as an 'employer of choice'. Most non-market and market benefits accrue to organisations that pay, at least in part, for training. Training fully financed by employees negatively affects job satisfaction. Employees will be more prone to leave or be less likely to display desirable job-related behaviour (Section 4.2) that brings benefits to the organisation.

Studies have also shown that training can improve quality (Katou and Budhwar, 2007) and customer satisfaction (Ely, 2004). External or spillover benefits of VET, for example, when one employee benefits from the knowledge of another, bring net gains for organisations (Battu et al., 2004). Other evidence suggests that continuing VET helps knowledge transfer in organisations particularly between older and younger workers (European Commission, 2006).

Organisations appear increasingly to recognise the value of retaining positive spillovers from continuing VET (CEREQ, 2005). Some employers invest in VET to develop a learning culture in the organisation (Lindley and Hogarth, 1992). Some organisations run training courses specifically designed to increase commitment to the organisation (Green et al., 2000).

#### **3.4.3. Non-market/economic benefits for countries and societies**

Education and training have external effects that bring benefits not only to individuals, but also to the country and society as a whole. According to McMahon (1999), health, democratisation and human rights, improved environments and reduced national crime and drug use can be regarded as non-market benefits of education for countries and societies (Section 3.4.1).

There is evidence of education being associated with reductions in crime (Lochner, 2011) as well as better functioning democracies (Hoskins et al., 2008). There is also evidence of a role for initial VET in contributing to lower crime. Christoffersen et al.'s (2003) study of Danish young people aged between 15 and 27, singles out VET as the most suitable educational route for the at-risk cohort. Loeber and Farrington (2000) also found that lack of vocational opportunities in UK schools is a risk factor associated with delinquency.

Measuring non-market benefits of VET at national or societal levels is different from measuring benefits for individuals. Benefits at macrosocial level apply to populations rather than individuals. Findings on outcomes of VET (or the relationship identified) for individuals may not hold at societal level <sup>(15)</sup>. What benefits individuals may not benefit society overall.

Certain non-market benefits can only be properly observed and measured at macro level. For example, political rights are not owned by individuals but derive from a society's legal structure. Although affected by individual choices, public health at macro level is not an aggregation of individual decisions. Other

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<sup>(15)</sup> Applying correlations observed at population level to individuals can lead to stereotyping as it assumes that each individual's characteristics match the average.

factors need to be considered, such as government spending on health and income per capita.

Cedefop's study (Cedefop, 2011e) aimed to cast light on non-market benefits of VET at macrosocial level, in particular civic engagement and public health and how they are affected by the institutional make-up of various countries.

The findings can be seen, initially, as disappointing for VET advocates. Cedefop's study found no significant relationships between VET and civic engagement and public health for countries and societies as a whole <sup>(16)</sup>. However, it also appears that the same is true of general education at comparable level. Significant findings have only been found for higher education.

According to Green et al. (2006), education, and training may affect macrosocial indicators of non-market benefits through their effect on equity <sup>(17)</sup> and social cohesion. Social integration, defined as movement of a society's disadvantaged groups into its mainstream, is a common indicator for countries in measuring macrosocial non-market benefits of VET. Many European countries, for example Finland, Germany, Lithuania, Norway and the UK, report VET's positive effects on integrating groups at risk of social exclusion (Cedefop, 2011b). There is also evidence that initial VET can increase their wages, but the extent to which this happens varies between different social groups (Neuman and Ziderman, 2003).

Preston and Green (2008) discuss how VET can be positive and negative for equity. Initial VET provides an alternative for those who would otherwise be excluded from learning and may equalise early outcomes such as wages (Section 3.3.1). Continuing VET may compensate for earlier skill deficits. But targeted VET initiatives often used alongside mainstream standard routes may have mixed effects in tackling inequality as they can stigmatise groups. Targeted VET initiatives often exclude those on the borderline of eligibility (an example of how effects on individuals cannot be simply aggregated to measure national outcomes) and may not be sufficiently oriented to work skills.

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<sup>(16)</sup> The study was hampered by problems due to lack of data. The study pooled short time series data from Australia, Austria, Belgium, Canada, Denmark\*, Finland, France\*, Germany\*, Greece, Ireland, Italy, Japan, Netherlands\*, New Zealand, Norway, Portugal, Spain\*, Sweden\*, Switzerland, the UK\* and the US. Long-term (20 years) time series on stock of vocational skills were constructed for those countries with an asterisk. However, sample sizes remained quite small, especially compared to data sets on benefits of education for individuals.

<sup>(17)</sup> Equity and equality are not synonymous. Equity relates to overall distribution of education and income. Equality relates to positioning various groups.

Turning to other forms of inequality, Rubery and Fagan (European Commission, Rubery and Fagan, 1993) find that VET programmes in Europe have a greater degree of gender bias than academic ones. However, this overlooks specifics of institutional arrangements. Evans (2006) found gender autonomy (and hence gender equality) was higher in vocational learning contexts where gender was 'recognised'. People were supported in gender atypical career choices, tuition occurred in mixed gender classes and where there was awareness of the dangers of specifying 'gender typical' key competences.

Taken together, these studies seem to indicate that it is not necessarily level of participation in VET which is important for macrosocial benefits by promoting social inclusion, but its structural or institutional arrangements.

### 3.5. Blurred boundaries between different benefits

Identifying and measuring specific benefits of VET is difficult. VET is often overshadowed by general and particularly higher education (an irony as so much higher education is vocational, for example medicine, law and engineering). Consequently, VET's specific benefits are overlooked by research and policy.

Despite these difficulties, there is a growing body of increasingly reliable evidence that VET brings specific, if not unique, benefits and that returns on investing in VET appear to equal those on investing in general education; an important finding that deserves more study.

In calculating benefits of VET and making decisions about investing in it, individuals, organisations, and governments (albeit to a lesser extent), tend to overlook external benefits that can be shared by others, including society at large. However, the boundary between market and non-market external benefits of VET is blurred. Reduced crime (a non-market, social externality) due to VET may also lead to higher income per capita (a market, economic externality) (Knack and Keefer, 1997). VET can help reduce poverty and there is evidence that more equal societies fare better economically (Wilkinson and Pickett, 2010). VET's wide ranging benefits illustrate its dual role of contributing to economic excellence and social inclusion.

Assessing its positive and negative external effects and interaction of market and non-market benefits is important in calculating VET's true benefits and the full return on the investment made. Indications are that externalities and social non-market benefits from investing in VET may be higher than private returns. This argues for investment in VET being directed not only by economic considerations but also by social (market and non-market) returns. The problem lies in expressing the value of social (market and non-market) returns in money terms to make their scale visible.

## CHAPTER 4

# Maximising VET's benefits in organisations

### 4.1. Introduction

Much investment in education and training is turned into various market and non-market benefits for individuals, the economy and society by organisations (Blundell et al., 1999; Wilson and Briscoe, 2004).

This statement, while often quoted, regards organisations as beneficiaries of training. In doing so it does not do justice to the special role organisations have in generating VET's benefits. Without organisations many of VET's benefits would not be realised. High wages for highly-qualified individuals, economic growth through higher productivity, individual wellbeing through job satisfaction leading to better health and less crime; such benefits are unimaginable without organisations.

Two defining aspects set organisations apart. First, organisations have a dual role concerning skills. They contribute to skill formation by investing in training, by providing learning on-the-job and as partners in apprenticeship schemes. They are also major consumers of the skills VET provides.

Second, organisations are communities, in effect small societies with their own cultures in which people interact. Consequently, organisations, as makers and users of skills stand to gain substantially from harnessing not only VET's private market benefits, but also its external non-market benefits (which arise through social interaction) and use them to increase productivity and maximise the return on their investment in skills. This chapter looks at how VET's various benefits can contribute to improving individual worker's productivity and then goes on to discuss conditions that need to be in place to maximise VET's benefits for the whole organisation. It goes on to suggest a new framework for organisations to consider when deciding to invest in VET.

## 4.2. Productivity gains from individuals through VET

Most organisations invest in training to improve their performance (Alliger et al. 1997; Kozlowski et al., 2000) and decisions on how much to invest are partly determined by concerns about costs relative to benefits.

Economic theory emphasises private market benefits for organisations, for example higher productivity from trained workers. This logic argues that investment in generic training carries a greater risk of being lost because workers will leave, taking their new skills to obtain higher wages elsewhere. Consequently, employers should offer and pay for specific training that increases worker productivity only in the organisation. Economic theory oversimplifies matters, however. People leave organisations for many reasons, not just wages and it overlooks the importance of stable employment relationships.

Long-term employment relationships are an important complement to training provision. When organisations can credibly commit to long-term employment relationships they can also capture some of the returns to general training (Moen and Rosen, 2004) <sup>(18)</sup>. Distinctions between organisation-specific and general training become blurred as both can improve productivity due to VET's intangible external and non-market benefits.

In a stable, long-term employment relationship continuing VET can be used as an incentive based on social exchange. Where workers regard training opportunities as a 'gift' or as a positive signal of investment in them by the organisation, they may respond by putting more effort into their work, for example working longer hours and paying greater attention to quality. This 'gift' exchange is central to the efficiency wage model in Akerlof and Yellen (1986) and Bryson et al. (2012). Consequently, training, including general training to increase productivity. This approach bridges economics and occupational psychology. It recognises that employer-provided VET <sup>(19)</sup> has a positive effect on several margins, for example by improving job content (via job enrichment) and as a sign of confidence and security. This psychological

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<sup>(18)</sup> Organisations can capture the return on their investment in training if they pay workers below their marginal product, as is likely on imperfect labour markets (Acemoglu and Pischke, 1998; 1999a; 1999b).

<sup>(19)</sup> In contrast, employee-funded training has a negative effect on job satisfaction. Employees may be unhappy at having to fund their own training, or employees with low levels of job satisfaction are more likely to pay for their own training to increase their chances of finding another job.

contract is possible as workers, generally, have an interest in training. More than 80% of citizens from 15 EU Member States think learning is valuable (Cedefop, 2004). Just as participation in education and training can reduce criminal activity and improve health for societies, it can also generate similar externalities in organisations. For example, less theft, damage and lower absenteeism reduces costs and improves competitiveness.

### 4.3. Productivity gains from the organisation's workforce through VET

Incentives address individual workers, but do not account for how workers interact with one another.

Although the gift exchange model can increase individual worker's productivity, it may not directly improve productivity of the whole workforce (or organisation's community). Productivity at the organisation level depends on complex interactions between workers. VET can promote these interactions by helping develop trust between workers and management and among workers. Trust arises especially where workers are confident that VET is not exclusively for the organisation's benefit. Workers have to perceive that they can use their abilities in their work (including skills learned while in training or through interaction with colleagues) and that they have some freedom in how they organise their work.

Organisations in which employees cooperate, with one another and with management are better placed to optimise production processes, for example by resolving bottlenecks and reducing machine downtime. Developing and implementing product or process innovation is also easier.

Desirable conduct at work is known as organisational citizenship behaviour (OCB) or extra-role behaviour (Organ et al., 2006; Spitzmuller et al., 2008). OCB focuses on discretionary behaviour, workers choose to cooperate or not, which is not explicitly recognised in wages. OCB is encouraged through group affiliation which long-term employment relationships tend to favour as they encourage trust which can be particularly effective in sustaining worker cooperation and commitment to the organisation. Workers spend around a third of their lives at work and, as an organisation is also a community, if membership of the organisation reflects positively on someone's self-image and identity, it can increase their personal commitment (Simon, 1951; Ramalingam and Rauh, 2010; Haslam, 2004).

VET can encourage OCB, and 'good citizens' in organisations, because by developing not only human but also identity, social and cultural capital (Section 2.2) it influences behaviour as well as skills. Further, there is a strong association between OCB and job satisfaction and the relationship between VET and job satisfaction is well established. Siebern-Thomas (2005) found a positive relationship between VET and job satisfaction across 13 European countries. Cornelissen (2006) found job satisfaction to be positively and significantly influenced by access to opportunities for learning and career advancement. By supporting a social context in which employees can share experiences to solve problems and exchange ideas, VET can strengthen relationships between colleagues, reduce conflict and so, indirectly, increase efficiency and productivity for the whole organisation. In contrast, wages have been found less effective in stimulating cooperative behaviour in the workforce as emphasis on money increases self-interest (Vohs et al., 2006).

Approached from this angle training becomes a work incentive that should be part of the organisation's reward structure. However, realising benefits may be difficult where workers have negative attitudes to training (OECD, 2003; WMRO, 2006). Despite overall positive attitudes to training developing skills generally requires avoiding or overcoming several personal barriers to training, such as a fear of training, particularly off-the-job training in a 'classroom' environment among individuals with low basic skills and older workers (Cully et al., 2000), lack of flexibility if outside working hours, and family responsibilities. Flatter organisation hierarchies leading to fewer opportunities for promotion also sometimes act as disincentives to participate in VET. Workers or managers may perceive training as a threat (Didato, 1976). Conditions need to be in place throughout the organisation to overcome these problems.

#### 4.4. Creating conditions for competitive advantage through VET

For organisations to achieve their strategic goals their workers must have not only the right knowledge, skills and abilities, but also the right behaviour and attitudes (Thang et al., 2012). Organisations and workers gain most when joint action is allowed to emerge. Because VET's market and non-market benefits can support such joint action, it should be seen in the long term and strategically integral to the organisation's activities (Bosworth and Stanfield,

2009). Workers spend around a third of their lives at work. For VET to produce external effects throughout the organisation, employees must feel supported to participate in training and operate in a workplace with a clear learning culture.

Organisations are more likely to harness full potential of VET's benefits through productivity gains when they see themselves as a community, regarding their workers as long-term strategic assets. This requires a shift towards long-term employment relationships rich in social and identity capital that inspire workers' association with and commitment to the organisation.

Organisations that train more tend to experience a stronger impact from VET (Cedefop, 2011d). When employer investment in training is relatively modest and ad hoc, or work is mundane and monotonous, gains from training are likely to be mediocre and unlikely to last. Relatively low investment in VET by the organisation coupled with a working environment regarding employees as easily replaceable factors of production, results in training delivering few, if any, of its wider benefits, because it does not generate commitment to the organisation. Rather, it can be counterproductive by encouraging workers to consider their own individual gains, rather than identify with the organisation.

VET should be seen as a long-term process of continuous professional development, integrated into broader human resource management (HRM) practices. VET has a stronger impact on job satisfaction when integrated into HRM practices (Wright and McMahan, 1992; Cedefop, 2011c). Clusters of HRM practices are significantly more effective than individual practices and so too is VET (Subramony, 2009). Consequently, VET's benefits are also more likely to be maximised when organisations adopt a broad approach to VET where obligations are shared and exchange encouraged. Workers, potentially, should have access to continuing VET and personal development. By being inclusive, VET is seen by employees as recognition of their value to the organisation (Cedefop, 2011c). However, workers should also take responsibility for their career developments in the organisation.

Far from being theory, case studies provide evidence that organisations are well acquainted with this approach. Many, from various sectors, have adopted it (Cedefop, 2011c). Evidence shows that organisations provide both generic and organisation-specific training. In Cedefop's study, organisations display a clear economic rationale in providing VET to meet their projected future skill short- (lower-skill occupations) and long-term needs (high-skill occupations), but also stress the psychological motive to invest in VET because of its impact on workforce morale. Reflecting their awareness of the wider benefits of VET, the main rationale for organisations to invest in VET is that it encourages

commitment as organisational values are more readily embedded in trainees than in skilled workers recruited from elsewhere. People who train with an organisation are more likely to stay with it, all things being equal, because of the close affiliation between the organisation's values and those of former trainees and apprentices. Shared values can contribute to a cooperative working environment. Providing training also gives the organisation a pool of committed, loyal employees from which to select future supervisors and managers.

This finding is not unique to Cedefop's study. For example, VET's impact on workforce morale is why employers provide basic literacy courses to workers in the UK and US (Wolf and Evans, 2011; Hollenbeck and Timmeney, 2008). Research on high-performance workplaces shows that they integrate VET into broader HRM and work organisation practices (Osterman, 1995) (Bosworth, 2005; Eurofound, 2011) and are characterised by practices to encourage:

- (a) high employee involvement to promote trust in and commitment to the organisation;
- (b) investment in human capital and skill formation;
- (c) commitment through rewards to increase employees' stakes in the organisation's success.

This approach is highly relevant for small- and medium-sized enterprises (SMEs), who may not have a large, or indeed any HRM department. Because they lack economies of scale to exploit specific technical skills through division of labour, VET's indirect benefits could be relatively more significant for SMEs. SMEs have fewer career progression opportunities, but they can still use VET as a type of reward. A way to keep good staff, perhaps even for a lower wage, is to ensure they are happy working there and VET can contribute to that. Benefits from social interaction can be particularly powerful in SMEs and the workplace community becomes an organisation's strategic asset.

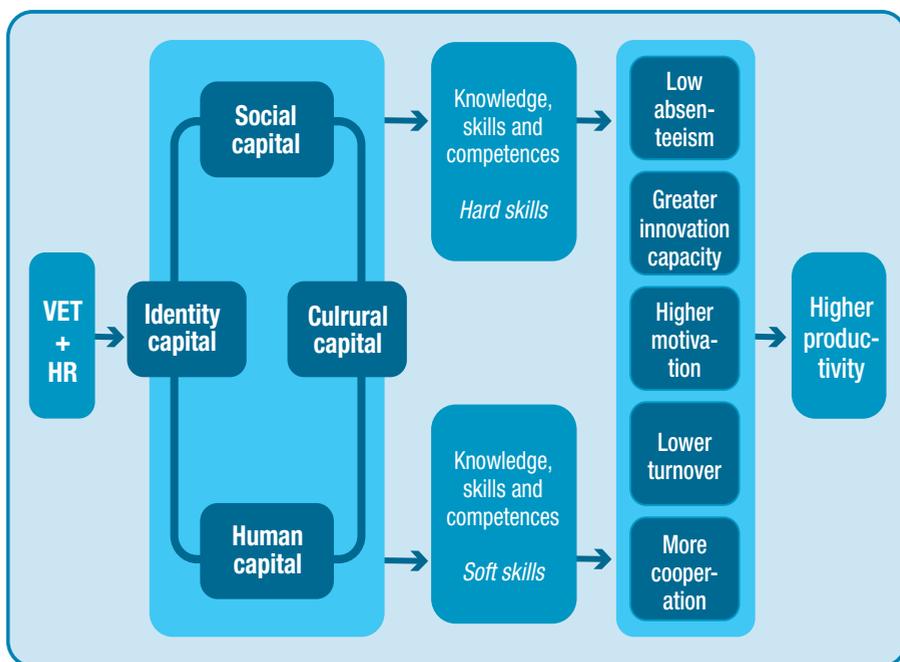
Recognising potential importance of external non-market benefits of training, implies understanding that a substantial part of VET's benefits are intangible, for example its influence on work-related behaviour and difficult to account for in a cost-benefit analysis of investment in training.

Seeing VET in narrow organisation-specific terms and focusing on financial costs and only market benefits when deciding to invest in VET underestimates its value. Increasingly vocational and general qualifications are seen as complementary. Both are needed for high productivity. A wide body of research shows that VET's market and non-market benefits for organisations tend to be mutually reinforcing. This broader framework needs to be considered when deciding about investing in VET. When account is taken of external non-

benefits to organisations generated by investment in VET, calculations of the respective cost and benefits change and a different framework is needed for considering VET's impact on an organisation's productivity (Figure 4).

When VET stimulates organisational citizenship behaviour it can be self-sustaining. It repays its costs through high productivity, making training policy sustainable.

Figure 4. **How economic (market) and social (non-market) benefits of VET improve organisational performance**



Source: Cedefop.

It becomes an asset and organisations not using such benefits could undermine a potential strategic competitive advantage.

Above all, to achieve competitive advantage, an organisation's VET policies and its wider HRM practices must be consistent with how it competes on its markets. Decisions on investment in VET must be consistent and coherent with how organisations approach their product markets (Eurofund, 2011).

Where organisations base their comparative advantage on low production costs there is little role for training. Low production costs are based on low

wages, simple and modular production processes requiring simple tasks which accommodate high labour turnover rates. Comparative advantage based on high productivity requires arrangements, based on long-term relationships to develop trust. The organisation exploits cooperation between workers. Teamwork and learning can be sources of strategic advantage and make the organisation more resilient to economic crises and swings in the business cycle.

Government policies have an important role in how best practices spread throughout the economy (Cedefop, 2012d). For example, economic activity tends to be concentrated and some regions and cities prosper while others struggle. As a result, benefits from VET accrue to already wealthy areas. Through coordinated investment in education and training and research and development as part of integrated industrial policies tailored to regional needs, governments can contribute to developing industrial clusters in less well-off regions (Dawley et al., 2010). Such an approach can encourage organisations to develop production arrangements that support high value-added markets and cross fertilisation of activities (Bailey et al., 2010) that strengthen the organisation against economic crises (Canello, 2012).

# Conclusions

Despite the relentless pace of technological progress over the past few decades, people remain central to the efficient operation of modern organisations and are a key source of competitive advantage (Prahalad, 1983; Pfeffer, 1994; Wright et al., 1994). As repetitive tasks in jobs at all levels (from routine production work to piloting an aeroplane) are increasingly replaced by technology (Cedefop, 2012b), people will become even more important as, in jobs at all levels, they will have to deal with non-routine and personal tasks requiring thought and commitment as well as technical skills. Europe's economic and social future depends on getting the best out of its people.

Everyone agrees education and training have an important role as they bring many different kinds of benefits to different groups at different levels. However, as this publication has tried to show, there is more to it than that.

Education and training are not just about developing human capital – someone's knowledge, skills and competences. They develop social, cultural and identity, as well as human capital. These four types of personal capital combine in different ways to influence not only a person's knowledge, skills and competences, but also the extent to which that person will learn and subsequently use the skills acquired. Ability is not just what you know, but also knowing how to use what you know. Education and training's influence on behaviour is just as important as its influence on skills.

This publication has focused, as far as possible, on benefits of vocational education and training (VET). It shows that VET appears to generate the same types of benefits and similar rates of return as general education. VET's relatively poor parity of esteem compared to general education in some countries is not justified based on the evidence discussed earlier. It is also a mistake to see skills acquired through general education and VET as substitutes. They are complementary. Individuals will need both to secure a good job with high wages. Consequently, the real and most constructive debate is not about whether general education or VET is better than the other, but about which learning track is better for the persons concerned at which point in their working lives.

Despite its influence on behaviour and other types of personal capital, most research concentrates on VET's development of human capital and the economic market benefits that accrue from having particular skills. There is a

substantial body of research across many countries showing that VET can bring considerable market benefits, such as higher wages for individuals, increased productivity for organisations and economic growth. However, there is also substantial research showing that VET is not just about market benefits. VET also brings social benefits. For many years it has been used as a labour market instrument to promote social inclusion and equity. VET is also known to have other social benefits such as better health and job satisfaction which contribute towards wellbeing. Research that has looked at education and training's effect on social outcomes underlines their influence on behaviour as well as skill formation. However, such research has tended to look specifically at one issue, such as better health or reduced crime, rather than how VET's different economic market and social non-market benefits interact and reinforce one another. In effect the boundaries between VET's economic and non-economic benefits are blurred. A combination of skills and improved wellbeing (through better health or more self-confidence) acquired through VET are more likely to enable an individual to earn high wages than skills alone.

While wellbeing from VET is acknowledged to accrue to individuals and society as a whole, the fact that it also accrues to organisations and can improve their economic performance has not received the attention it deserves.

It is in organisations that people use their capacities to translate VET's benefits into practical outcomes, such as higher productivity for the organisation, or higher wages for the individual.

Although they are economic agents, organisations are also communities. They are small societies that create an environment where, as in society as a whole, VET's market benefits, such as more and better skills and non-market benefits that influence behaviour and use of those skills can interact to improve productivity.

For example, VET's well-documented positive influence on job satisfaction can influence behaviour at work. Organisational citizenship behaviour can indirectly improve an organisation's productivity and performance by strengthening cooperation throughout its workforce. For SMEs with limited scope for career progression, or for people working in jobs for which they are overqualified, the wellbeing and positive work environment generated through VET could be more important than the practical skills learned. VET's behavioural non-market benefits come about through the 'gift' exchange identified in the efficient wage model. VET is seen by the individual worker as a gift or a positive sign of investment by the organisation in them, who then

respond through positive behaviour. Research also indicates that VET is more effective in encouraging positive behaviour and cooperation between workers than wages.

It is by creating the conditions that encourage interaction of its various benefits, that investment in VET is maximised. Such conditions require organisations to regard their workforces as long-term strategic assets developing stable employment relationships to encourage trust. They also require taking a broad approach to VET, combining general and organisation-specific training and using VET as an incentive and part of a long-term process of continuous professional development integrated into broader human resource management practices. Used in this way, VET becomes a long-term strategic tool for developing competitive advantage.

Findings of this analysis on generating, identifying and maximising VET's benefits suggest that many of them, in some cases perhaps the most important, are intangible and difficult to express in monetary terms. Consequently, organisations (as well as individuals and governments) may fail to account for them properly in any cost-benefit analysis underpinning their decision to invest in training. When considering returns on investment in VET investors should consider a broader framework (as suggested in Chapter 4) that takes VET's market and non-market benefits into account. Such an approach may influence the expected value of the investment in VET and so the propensity to invest in it.

Taking full account of all VET's benefits is particularly important for organisations that want to compete based on high quality, high value-added goods, and where skills and attitudes need to combine to bring success.

As an instrument of public policy, VET's market and non-market benefits are acknowledged. VET is seen as a way of integrating young people and those at a disadvantage into the labour market, a way of promoting social inclusion generally by improving employment prospects of individuals.

VET is not a silver bullet. It will not remedy all economic woes and social ills, but Europe's competitive advantage depends not only on its workforce's skills, but also their effective use. VET has a crucial role in both. Consequently, VET should be seen as an instrument for excellence and an essential strategic investment in people, skills and the working environment that can deliver efficiency, quality goods and services.

# List of abbreviations

<b>ECHP</b>	European Community household panel
<b>GDP</b>	gross domestic product
<b>HRM</b>	human resource management
<b>ISCED</b>	international standard classification of education
<b>ISSP</b>	international social survey programme
<b>LFS</b>	labour force survey
<b>OCB</b>	organisational citizenship behaviour
<b>SILC</b>	statistics on income and living conditions
<b>SME</b>	small- and medium-sized enterprise
<b>VET</b>	vocational education and training

# References

- Acemoglu, D.; Pischke, J.-S. (1998). Why do firms train? Theory and evidence. *Quarterly journal of economics*, February 1998, Vol. 113, No 1, pp. 79-119. <http://dx.doi.org/10.1162/003355398555531> [accessed 10.4.2013].
- Acemoglu, D.; Pischke, J.-S. (1999a). Beyond Becker: training in imperfect labour markets. *Economic journal*, February 1999, Vol. 109, No 453, pp. 112-142. <http://dx.doi.org/10.1111/1468-0297.00405> [accessed 10.4.2013].
- Acemoglu, D.; Pischke, J.-S. (1999b). The structure of wages and investment in general training. *Journal of political economy*, June 1999, Vol. 107, No 3, pp. 539-572. <http://dx.doi.org/10.1086/250071> [accessed 10.4.2013].
- Akerlof, G.A.; Yellen, J. (1986). *Efficiency wage models of the labour market*. Orlando, FL: Academic Press.
- Alliger, G.M. et al. (1997). A meta-analysis on the relations among training criteria. *Personnel psychology*, June 1997, Vol. 50, No 2, pp. 341-358. <http://dx.doi.org/10.1111/j.1744-6570.1997.tb00911.x> [accessed 10.4.2013].
- Arulampalam, W. et al. (1997). Work-related training and earnings growth for young men in Britain. *Research in labor economics*, Vol. 16, pp. 119-147.
- Bailey, D. et al. (2010). Place-renewing leadership: trajectories of change for mature manufacturing regions in Europe. *Policy studies*, Vol. 31, No 4, pp. 457-474. <http://dx.doi.org/10.1080/01442871003723408> [accessed 10.4.2013].
- Baker, R.; Thompson, J. (1995). Innovation in general practice: is the gap between training and non-training practices getting wider? *British journal of general practice*, June 1995, Vol. 45, No 395, pp. 297-300. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1239263/pdf/brjgenprac00019-0021.pdf> [accessed 10.4.2013].
- Barro, R.J. (1998). *Determinants of economic growth: a cross-country study*. Cambridge, MA: MIT Press.
- Barro, R.J.; Lee, J.-W. (1993). International comparisons of educational attainment. *Journal of monetary economics*, Vol. 32, No 3, pp. 363-394. [http://dx.doi.org/10.1016/0304-3932\(93\)90023-9](http://dx.doi.org/10.1016/0304-3932(93)90023-9) [accessed 10.4.2013].

- Bartlett, W. (2009). The effectiveness of vocational education in promoting equity and occupational mobility amongst young people. *Economic annals*, January-March 2009, Vol. LIV, No 180, pp. 7-39.  
<http://dx.doi.org/10.2298/EKA0980007B> [accessed 10.4.2013].
- Bassanini, A.; Scarpetta, S. (2001). The driving forces of economic growth: panel data evidence for the OECD countries. *OECD journal: economic studies*, Vol. 33, No 2.  
<http://www.oecd.org/economy/growth/18450995.pdf> [accessed 10.4.2013].
- Battu, H. et al. (2004). Human capital spillovers in the workplace: evidence for the service sector in Britain. *International journal of manpower*, Vol. 25, No 1, pp. 123-138.  
<http://dx.doi.org/10.1108/01437720410525036> [accessed 10.4.2013].
- Becker, G.S. (1964). *Human capital: a theoretical and empirical analysis, with special reference to education*. Chicago: University of Chicago Press.
- Benhabib, J.; Spiegel, M.M. (1994). The role of human capital in economic development: evidence from aggregate cross-country data. *Journal of monetary economics*, October 1994, Vol. 34, No 2, pp. 143-173.  
[http://dx.doi.org/10.1016/0304-3932\(94\)90047-7](http://dx.doi.org/10.1016/0304-3932(94)90047-7) [accessed 10.4.2013].
- Billet, S. (2011). *Vocational education: purposes, traditions and prospects*. Dordrecht: Springer.
- Bishop, J.H. (1991). On-the-job training of new hires. In: Stern, D.; Ritzen, J.M.M. (eds). *Market failure in training: new economic analysis and evidence on training of adult employees*. New York: Springer Verlag.
- Bishop, J.H. (1994). The impact of previous training in schools and on jobs on productivity, required OJT and turnover of new hires. In: Lynch, L. (ed.). *Training and the private sector: international comparisons*. Cambridge, MA: National Bureau of Economic Research, NBER comparative labour markets series, pp. 161-199.  
<http://www.nber.org/chapters/c8781.pdf> [accessed 10.4.2013].
- Björklund, A. (1994). Evaluations of labour market policy in Sweden. *International journal of manpower*, Vol. 15, No 5, pp. 16-31.  
<http://dx.doi.org/10.1108/01437729410061429> [accessed 10.4.2013].
- Blundell, R. et al. (1999). Human capital investment: the returns from education and training to the individual, the firm and the economy. *Fiscal studies*, March 1999, Vol. 20, No 1, pp. 1-23.  
<http://dx.doi.org/10.1111/j.1475-5890.1999.tb00001.x> [accessed 10.4.2013].

- Bosworth, D.L. (2005). *The determinants of enterprise performance*. Manchester: Manchester University Press.
- Bosworth, D.L.; Stanfield, C. (2009). *Review of employer collective measures: a conceptual review from a public policy perspective: evidence report 6*. Wath-upon-Deane: UK Commission for Education and Skills.  
<http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-6-employer-collective-measures-conceptual-review.pdf> [accessed 10.4.2013].
- Bourdieu, P. (1977). Cultural reproduction and social reproduction. In: Karabel, J.; Halsey, A.H. (eds). *Power and ideology in education*. New York: Oxford University Press, pp. 487-511.
- Bourdieu, P. (1986). The forms of capital. In: Richardson, J.G. (ed.). *Handbook of theory and research for the sociology of education*. New York: Greenwood Press, pp. 241-258.
- Brunello, G. et al. (2011). *The causal effect of education on health: what is the role of health behaviours?* Bonn: IZA, Institute for the Study of Labour. IZA discussion paper; No 5944 <http://ftp.iza.org/dp5944.pdf> [accessed 10.4.2013].
- Brunello, G. et al. (2012). Training subsidies and the wage returns to continuing vocational training: evidence from Italian regions. *Labour economics*, June 2012, Vol. 19, No 3, pp. 361-372.  
<http://dx.doi.org/10.1016/j.labeco.2012.03.002> [accessed 10.4.2013].
- Bryson, A. et al. (2012). Do higher wages come at a price? *Journal of economic psychology*, February 2012, Vol. 33, No 1, pp. 251-263.  
<http://dx.doi.org/10.1016/j.joep.2011.10.005> [accessed 10.4.2013].
- Canello, J. (2012). *Regional resilience and evolutionary trends in Marshallian industrial districts: an empirical investigation using Italian microdata*. Mimeo.  
<http://www.aomevents.com/media/files/ISS%202012/ISS%20SESSION%206/Canello.pdf> [accessed 10.4.2013].
- Cedefop (2008). *Terminology of European education and training policy: a selection of 100 key terms*. Luxembourg: Publications Office.  
[http://www.cedefop.europa.eu/EN/Files/4064\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/4064_en.pdf) [accessed 10.4.2013].
- Cedefop (2011a). *The economic benefits of VET for individuals*. Luxembourg: Publications Office. Cedefop research paper; No 11.  
[http://www.cedefop.europa.eu/EN/Files/5511\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5511_en.pdf) [accessed 10.4.2013].

- Cedefop (2011b). *The benefits of vocational education and training*. Luxembourg: Publications Office. Cedefop research paper; No 10. [http://www.cedefop.europa.eu/EN/Files/5510\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5510_en.pdf) [accessed 10.4.2013].
- Cedefop (2011c). *The anatomy of the wider benefits of VET in the workplace*. Luxembourg: Publications Office. Cedefop research paper; No 12. [http://www.cedefop.europa.eu/EN/Files/5512\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5512_en.pdf) [accessed 10.4.2013].
- Cedefop (2011d). *The impact of vocational education and training on company performance*. Luxembourg: Publications Office. Cedefop research paper; No 19. [www.cedefop.europa.eu/EN/Files/5519\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5519_en.pdf) [accessed 10.4.2013].
- Cedefop (2011e). *Vocational education and training is good for you: the social benefits of VET for individuals*. Luxembourg: Publications Office. Cedefop research paper; No 17. [http://www.cedefop.europa.eu/EN/Files/5517\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5517_en.pdf) [accessed 10.4.2013].
- Cedefop (2012a). *From education to working life: the labour market outcomes of vocational education and training*. Luxembourg: Publications Office. <http://www.cedefop.europa.eu/EN/publications/20448.aspx> [accessed 10.4.2013].
- Cedefop (2012b). *Europe's skill challenge: lagging skill demand increases risks of skill mismatch*. Cedefop briefing note; March 2012. [http://www.cedefop.europa.eu/EN/Files/9068\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/9068_en.pdf) [accessed 10.4.2013].
- Cedefop (2012c). *Learning and innovation in enterprises*. Luxembourg: Publications Office. Cedefop research paper; No 27. [http://www.cedefop.europa.eu/EN/Files/5527\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5527_en.pdf) [accessed 10.4.2013].
- Cedefop (2012d). *Sectoral perspectives on the benefits of vocational education and training*. Luxembourg: Publications Office. Cedefop research paper; No 22. [http://www.cedefop.europa.eu/EN/Files/5522\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/5522_en.pdf) [accessed 10.4.2013].
- Cedefop et al. (2004). *Lifelong learning: citizens' views in close-up: findings from a dedicated Eurobarometer survey*. Luxembourg: Publications Office. [http://www.cedefop.europa.eu/EN/Files/4038\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/4038_en.pdf) [accessed 10.4.2013].

- CEREQ (2005). Vocational training at French firms: a reflex or a strategy? *Training and employment*, September-October 2005, No 64. <http://www.cereq.fr/index.php/publications/Training-and-employment/Vocational-training-at-french-firms-A-reflex-or-a-strategy> [accessed 10.4.2013].
- Christoffersen, M.N. et al. (2003). An upbringing to violence? Identifying the likelihood of violent crime among the 1966 birth cohort in Denmark. *Journal of forensic psychiatry and psychology*, Vol. 14, No 2, pp. 367-381. <http://dx.doi.org/10.1080/1478994031000117830> [accessed 10.4.2013].
- Cohen, D.; Soto, M. (2007). Growth and human capital: good data, good results. *Journal of economic growth*, March 2007, Vol. 12, No 1, pp. 51-76. <http://dx.doi.org/10.1007/s10887-007-9011-5> [accessed 10.4.2013].
- Cornelißen, T. (2006). *Job characteristics as determinants of job satisfaction and labour mobility*. Hannover: Leibniz University Hannover, Faculty of Economics. Discussion paper; No 334. <http://www.zew.de/de/publikationen/dfgflex/paper%20Cornelissen2.pdf> [accessed 10.4.2013].
- Côté, J.E. (2005). Identity capital, social capital, and the wider benefits of learning: generating resources facilitative of social cohesion. *London review of education*, Vol. 3, No 3, pp. 221-237. <http://dx.doi.org/10.1080/14748460500372382> [accessed 10.4.2013].
- Council of the European Union (2009). Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training (ET 2020). *Official Journal of the European Union*, C 119, 28.5.2009, pp. 2-10. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:119:0002:0010:EN:PDF> [accessed 10.4.2013].
- Council of the European Union; European Commission (2010b). *The Bruges communiqué*. <http://libserver.cedefop.europa.eu/vetelib/2010/75928.pdf> [accessed 10.4.2013].
- Crook, R.T. et al. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of applied psychology*, May 2011, Vol. 96, No 3, pp. 443-456. <http://dx.doi.org/10.1037/a0022147> [accessed 10.4.2013].
- Cully, M. et al. (2000). Participation in, and barriers to, training: the experience of older adults. *Australasian journal on ageing*, November 2000, Vol. 19, No 4, pp. 172-179. <http://dx.doi.org/10.1111/j.1741-6612.2000.tb00231.x> [accessed 10.4.2013].
- Cutler, D.M.; Lleras-Muney, A. (2008). Education and health: evaluating theories and evidence. In: Schoeni, R.F. et al. (eds). *Making Americans*

- healthier: social and economics policy as health policy*. New York: Russell Sage Foundation.
- Cutler, D.M.; Lleras-Muney, A. (2010). Understanding differences in health behaviour by education. *Journal of health economics*, January 2010, Vol. 29, No 1, pp. 1-28. <http://dx.doi.org/10.1016/j.jhealeco.2009.10.003> [accessed 10.4.2013].
- Dawley, S. et al. (2010). *Towards the resilient region? Policy activism and peripheral region development*. London: London School of Economics and Political Science. SERC discussion papers; No 53. <http://eprints.lse.ac.uk/33523/1/sercdp0053.pdf> [accessed 10.4.2013].
- De Coulon, A.; Vignoles, A. (2008). *An analysis of the benefit of NVQ2 qualifications acquired at age 26-34*. Centre for the Economics of Education. CEE discussion paper; No 106. <http://cee.lse.ac.uk/ceedps/ceedp106.pdf> [accessed 10.4.2013].
- Denny, K. et al. (2003). *Education, earnings and skills: a multi-country comparison*. London: Institute for Fiscal Studies. Working paper; No 4/8. <http://www.ifs.org.uk/wps/wp0408.pdf> [accessed 10.4.2013].
- Desjardins, R. (2008). Researching the links between education and wellbeing. *European journal of education*, Vol. 43, No 1, pp. 23-35. <http://dx.doi.org/10.1111/j.1465-3435.2007.00333.x> [accessed 10.4.2013].
- Dickson, M.; Harmon, C. (2011). Economic returns to education: what we know, what we don't know, and where we are going – some brief pointers. *Economics of education review*, December 2011, Vol. 30, No 6, pp. 1118-1122. <http://dx.doi.org/10.1016/j.econedurev.2011.08.003> [accessed 10.4.2013].
- Dickson, M.; Smith, S. (2011). What determines the return to education: an extra year or a hurdle cleared? *Economics of education review*, December 2011, Vol. 30, No 6, pp. 1167-1176. <http://dx.doi.org/10.1016/j.econedurev.2011.05.004> [accessed 10.4.2013].
- Didato, S.V. (1976). How to overcome management's fear of training. *Training*, May 1976, Vol. 13, No 5, pp. 24-26.
- Dolton, P.J. et al. (1994). The wage effect of YTS: evidence from YCS. *Scottish journal of political economy*, November 1994, Vol. 41, No 4, pp. 444-453. <http://dx.doi.org/10.1111/j.1467-9485.1994.tb01138.x> [accessed 10.4.2013].
- Dorsett, R.P. et al. (2010). *Economic benefits of lifelong learning*. London: National Institute of Economic and Social Research. NIESR discussion

- paper; No 352. [http://www.niesr.ac.uk/pdf/300310\\_103442.pdf](http://www.niesr.ac.uk/pdf/300310_103442.pdf) [accessed 10.4.2013].
- Ely, R. (2004). A field study of group diversity, participation in diversity education programmes and performance. *Journal of organizational behavior*, Vol. 25, No 6, pp. 755-780. <http://dx.doi.org/10.1002/job.257> [accessed 10.4.2013].
- Eurofound (2011). *Management practices and sustainable organisational performance: an analysis of the European company survey 2009*. Dublin: Eurofound. <http://www.eurofound.europa.eu/pubdocs/2011/48/en/2/EF1148EN.pdf> [accessed 10.4.2013].
- European Commission (2005). *The returns to various types of investments in education and training*. Brussels: European Commission. [http://ec.europa.eu/education/policies/2010/studies/invest05\\_en.pdf](http://ec.europa.eu/education/policies/2010/studies/invest05_en.pdf) [accessed 10.4.2013].
- European Commission (2006). *Ageing and employment: identification of good practice to increase job opportunities and maintain older workers in employment: final report*. Brussels: European Commission. [http://www.metiseurope.eu/content/pdf/1\\_vs\\_gestion\\_des\\_ages\\_ageingr\\_eport\\_en.pdf](http://www.metiseurope.eu/content/pdf/1_vs_gestion_des_ages_ageingr_eport_en.pdf) [accessed 10.4.2013].
- European Commission (2010a). *Europe 2020: a strategy for smart, sustainable and inclusive growth: communication from the Commission*. COM(2010) 2020 final. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF> [accessed 10.4.2013].
- European Commission (2010b). *A new impetus for European cooperation in vocational education and training to support the Europe 2020 strategy: communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*. COM(2010) 296 final. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0296:FIN:EN:PDF> [accessed 10.4.2013].
- European Commission (2011). *Returns to education in European countries: evidence from the European Community statistics on income and living conditions (EU-SILC)*. Luxembourg: Publications Office. JRC scientific and technical reports. [http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/22267/1/reqno\\_jrc65411\\_eur\\_24850\\_en\\_web.pdf%5B1%5D.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/11111111/22267/1/reqno_jrc65411_eur_24850_en_web.pdf%5B1%5D.pdf) [accessed 10.4.2013].

- European Commission; Rubery, J.; Fagan, C. (1993). Occupational segregation of women and men in the European community. *Social Europe supplement*, No 3. Luxembourg: Publications Office.
- Feinstein, L. (2009). The wider benefits of learning. In: Rauner, F.; Maclean, R. (eds). *Handbook of technical and vocational education and training research*. Berlin: Springer, pp. 354-359.
- Feinstein, L. et al. (2006). What are the effects of education on health? In: Desjardin, R.; Schuller, T. (eds). *Measuring the effects of education on health and civic/social engagement*. Paris: OECD, pp. 171-354. <http://www.oecd.org/education/country-studies/37425753.pdf> [accessed 10.4.2013].
- Feinstein, L. et al. (2008). *The social and personal benefits of learning: a summary of key research findings*. London: Centre for Research on the Wider Benefits of Learning. <http://www.learningbenefits.net/Publications/FlagshipPubs/Final%20WBL%20Synthesis%20Report.pdf> [accessed 10.4.2013].
- Field, J. (2009). *Well-being and happiness*. Leicester: National Institute of Adult Continuing Education. IFLL thematic papers; No 4. <http://www.niace.org.uk/lifelonglearninginquiry/docs/IFLL-wellbeing.pdf> [accessed 10.4.2013].
- Freeman, J.A.; Hirsch, B.T. (2001). Do returns to human capital equalise across occupational paths? *Research in labor economics*, Vol. 20, pp. 217-242. [http://dx.doi.org/10.1016/S0147-9121\(01\)20043-0](http://dx.doi.org/10.1016/S0147-9121(01)20043-0) [accessed 10.4.2013].
- Gemmell, N. (1996). Evaluating the impacts of human capital stocks and accumulation on economic growth: some new evidence. *Oxford bulletin of economics and statistics*, February 1996, Vol. 58, No 1, pp. 9-28. <http://dx.doi.org/10.1111/j.1468-0084.1996.mp58001002.x> [accessed 10.4.2013].
- Ghebregiorgis, F.; Karsten, L. (2007). Employee reactions to human resource management and performance in a developing country: evidence from Eritrea. *Personnel review*, Vol. 36, No 5, pp. 722-738. <http://dx.doi.org/10.1108/00483480710774016> [accessed 10.4.2013].
- Görlitz, K. (2011). Continuous training and wages: an empirical analysis using a comparison-group approach. *Economics of education review*, August 2011, Vol. 30, No 4, pp. 691-701. <http://dx.doi.org/10.1016/j.econedurev.2011.02.008> [accessed 10.4.2013].

- Goux, D.; Maurin, É. (2000). Returns to firm-provided training: evidence from French worker-firm matched data. *Labour economics*, January 2000, Vol. 7, No 1, pp. 1-19. [http://dx.doi.org/10.1016/S0927-5371\(99\)00023-8](http://dx.doi.org/10.1016/S0927-5371(99)00023-8) [accessed 10.4.2013].
- Granovetter, M.S. (1974). *Getting a job: a study of contacts and careers*. Cambridge, Mass: Harvard University.
- Green, A. et al. (2006). *Education, equality and social cohesion: a comparative analysis*. Basingstoke: Palgrave Macmillan.
- Green, F. et al. (2000). The impact of training on labour mobility: individual and firm level evidence from Britain. *British journal of industrial relations*, June 2000, Vol. 38, No 2, pp. 261-275. <http://dx.doi.org/10.1111/1467-8543.00162> [accessed 10.4.2013].
- Groot, W. et al. (1994). Returns to within-company schooling of employees: the case of the Netherlands. In: Lynch, L. (ed.). *Training and the private sector*. Cambridge, MA: National Bureau of Economic Research, NBER comparative labour markets series, pp. 299-308. <http://www.nber.org/chapters/c8786> [accessed 10.4.2013].
- Groot, W.; Maassen van den Brink, H. (2007). The effects of education on health. In: Hartog, J.; Maassen van den Brink, H. (eds). *Human capital: theory and evidence*. New York: Cambridge University Press.
- Groot, W.; Maassen van den Brink, H. (2006). What does education do to our health? In: Desjardin, R.; Schuller, T. (eds). *Measuring the effects of education on health and civic/social engagement*. Paris: OECD, pp. 355-363. <http://www.oecd.org/education/country-studies/37425763.pdf> [accessed 10.4.2013].
- Hanushek, E.A. et al. (2011). *General education, vocational education and labour-market outcomes over the life cycle*. Bonn: IZA, Institute for the Study of Labour. IZA discussion paper; No 6083. <http://ftp.iza.org/dp6083.pdf> [accessed 10.4.2013].
- Hanushek, E.A.; Kim, D. (1995). *Schooling, labour force quality, and economic growth*. National Bureau of Economic Research. NBER working paper; No 5399. <http://www.nber.org/papers/w5399.pdf> [accessed 10.4.2013].
- Hartog, J.; Oosterbeek, H. (2007). What should you know about the private returns to education. In: Hartog, J.; Maassen van den Brink, H. (eds). *Human capital: theory and evidence*. New York: Cambridge University Press.
- Haslam, S.A. (2004). *Psychology in organisations: a social identity approach*. London: Sage.

- Heckman, J.J. (2000). Policies to foster human capital. *Research in economics*, March 2000, Vol. 54, No 1, pp. 3-56.  
<http://dx.doi.org/10.1006/reec.1999.0225> [accessed 10.4.2013].
- Heckman, J.J. (2008). Schools, skills and synapses. *Economic inquiry*, July 2008, Vol. 46, No 3, pp. 289-324.  
<http://dx.doi.org/10.1111/j.1465-7295.2008.00163.x> [accessed 10.4.2013].
- Heckman, J.J. (2011). Schools, skills and synapses. In: Phelps, E.S.; Sinn, H.-W. (eds). *Perspectives on the performance of the continental economies*. Cambridge: MIT Press.
- Heinrich, G.; Hildebrand, V. (2005). Returns to education in the European Union: a reassessment from comparative data. *European journal of education*, March 2005, Vol. 40, No 1, pp. 13-34.  
<http://dx.doi.org/10.1111/j.1465-3435.2005.00207.x> [accessed 10.4.2013].
- Hempell, T. (2003). Do computers call for training? *Firm-level evidence on complementarities between ICT and human capital*. Mannheim: ZEW, Centre for European Economic Research. ZEW discussion paper; No 3-20. <http://ftp.zew.de/pub/zew-docs/dp/dp0320.pdf> [accessed 10.4.2013].
- Higashi, Y. (2002). Firm-specific human capital and unemployment in a growing economy. *Japan and the world economy: international journal of theory and policy*, January 2002, Vol. 14, No 1, pp. 35-44.  
[http://dx.doi.org/10.1016/S0922-1425\(01\)00082-2](http://dx.doi.org/10.1016/S0922-1425(01)00082-2) [accessed 10.4.2013].
- Hollenbeck, K.; Bridget, T. (2008). Lessons learned from a workplace literacy initiative. *Employment research newsletter*, Vol. 15, No 2, pp. 4-6.  
[http://research.upjohn.org/cgi/viewcontent.cgi?article=1089&context=empl\\_research](http://research.upjohn.org/cgi/viewcontent.cgi?article=1089&context=empl_research) [accessed 10.4.2013].
- Hoskins, B. et al. (2008). Does formal education have an impact on active citizenship behaviour? *European educational research journal*, Vol. 7, No 3, pp. 386-402. <http://dx.doi.org/10.2304/eeerj.2008.7.3.386> [accessed 10.4.2013].
- Hoskins, B. et al. (2012). Learning citizenship through social participation outside and inside school: an international, multilevel study of young people's learning of citizenship. *British educational research journal*, June 2012, Vol. 38, No 3, pp. 419-446.  
<http://dx.doi.org/10.1080/01411926.2010.550271> [accessed 10.4.2013].

- Huang, J. et al. (2009). A meta-analysis of the effect of education on social capital. *Economics of education review*, August 2009, Vol. 28, No 4, pp. 454-464. <http://dx.doi.org/10.1016/j.econedurev.2008.03.004> [accessed 10.4.2013].
- Huang, J. et al. (2012). Does education promote social capital? Evidence from IV analysis and nonparametric-bound analysis. *Empirical economics*, June 2012, Vol. 42, No 3, pp. 1011-1034. <http://link.springer.com/article/10.1007/s00181-011-0450-7> [accessed 10.4.2013].
- Huang, J. et al. (forthcoming). Higher education and membership of voluntary groups. *Economics of education review* [forthcoming].
- Jenkins, A. et al. (2003). The determinants and labour market effects of lifelong learning. *Applied economics*, Vol. 35, No 16, pp. 1711-1721. <http://EconPapers.repec.org/RePEc:taf:applec:v:35:y:2003:i:16:p:1711-1721> [accessed 10.4.2013].
- Jensen, P. et al. (1993). The effects of labour market training on wages and unemployment: some Danish results. In: Bunzel, H. et al. (eds). *Panel data and labour market dynamics*. Amsterdam: North Holland.
- Jones, P. (2001). Are educated workers really more productive? *Journal of development economics*, February 2001, Vol. 64, No 1, pp. 57-79. [http://dx.doi.org/10.1016/S0304-3878\(00\)00124-3](http://dx.doi.org/10.1016/S0304-3878(00)00124-3) [accessed 10.4.2013].
- Jürges, H. et al. (2013). The effect of compulsory schooling on health: evidence from biomarkers. *Journal of population economics*, April 2013, Vol. 26, No 2, pp. 645-672. <http://dx.doi.org/10.1007/s00148-012-0409-9> [accessed 10.4.2013].
- Katou, A.A.; Budhwar, P.S. (2007). The effect of human resource management policies on organisational performance in Greek manufacturing firms. *Thunderbird international business review*, January-February 2007, Vol. 49, No 1, pp. 1-36. <http://dx.doi.org/10.1002/tie.20129> [accessed 10.4.2013].
- Keller, W. (1996). Absorptive capacity: on the creation and acquisition of technology in development. *Journal of development economics*, April 1996, Vol. 49, No 1, pp. 199-227. [http://dx.doi.org/10.1016/0304-3878\(95\)00060-7](http://dx.doi.org/10.1016/0304-3878(95)00060-7) [accessed 10.4.2013].
- Kenyon, R. (2005). The business benefits of apprenticeships: the English employers' perspective. *Education and training*, Vol. 47, No 4/5, pp. 366-373. <http://dx.doi.org/10.1108/00400910510601931> [accessed 10.4.2013].

- Klein, R.; Vella, F. (2006). *Estimating the return to endogenous schooling decisions for Australian workers via conditional second moments*. Bonn: IZA, Institute for the Study of Labour. IZA discussion paper, No 2407. <http://ftp.iza.org/dp2407.pdf> [accessed 10.4.2013].
- Knack, S.; Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *Quarterly journal of economics*, November 1997, Vol. 112, No 4, pp. 1251-1288. <http://dx.doi.org/10.1162/003355300555475> [accessed 10.4.2013].
- Kozlowski, S.W.J. et al. (2000). A multilevel approach to training effectiveness. In: Klein, K.; Kozlowski, S.W.J. (eds). *Multilevel theory, research, and methods in organisations: foundations, extensions, and new directions*. San Francisco, CA: Jossey-Bass Publishers, pp. 157-210.
- Krueger, A.B.; Lindahl, M. (2001). Education for growth: why and for whom? *Journal of economic literature*, December 2001, Vol. 39, No 4, pp. 1101-1136. <http://www.jstor.org/stable/2698521> [accessed 10.4.2013].
- Krueger, A.B.; Rouse, C. (1998). The effect of workplace education on earnings, turnover and job performance. *Journal of labor economics*, January 1998, Vol. 16, No 1, pp. 61-94. <http://dx.doi.org/10.1086/209882> [accessed 10.4.2013].
- Krueger, D.; Kumar, K.B. (2004). Skill-specific rather than general education: a reason for US-Europe growth differences? *Journal of economic growth*, June 2004, Vol. 9, No 2, pp. 167-207. <http://dx.doi.org/10.1023/B:JOEG.0000031426.09886.bd> [accessed 10.4.2013].
- Lazear, E.P. (2009). Firm-specific human capital: a skill-weights approach. *Journal of political economy*, October 2009, Vol. 117, No 5, pp. 914-940. <http://dx.doi.org/10.1086/648671> [accessed 10.4.2013].
- Leiponen, A. (2000). Competencies, innovation and profitability of firms. *Economics of innovation and new technology*, Vol. 9, No 1, pp. 1-24. <http://dx.doi.org/10.1080/10438590000000001> [accessed 10.4.2013].
- Leuven, E.; Oosterbeek, H. (2008). An alternative approach to estimate the wage returns to private-sector training. *Journal of applied econometrics*, June 2008, Vol. 23, No 4, pp. 423-434. <http://dx.doi.org/10.1002/jae.1005> [accessed 10.4.2013].
- Lindhal, M.; Canton, E. (2007). The social returns to education. In: Hartog, J.; Maassen van den Brink, H. (eds). *Human capital: theory and evidence*. New York: Cambridge University Press.

- Lindley, R.M.; Hogarth, T. (1992). *The costs and benefits of training in the European Community: report to the task force on education youth and training*. Brussels: European Commission.
- Lleras-Muney, A. (2005). The relationship between education and adult mortality in the United States. *Review of economic studies*, January 2005, Vol. 72, No 1, pp. 189-221. <http://dx.doi.org/10.1111/0034-6527.00329> [accessed 10.4.2013].
- Lochner, L. (2011). Non-production benefits of education: crime, health, and good citizenship In: Hanushek, E.A. et al. (eds). *Handbook of the economics of education, Vol. 4*. Amsterdam: North Holland, pp. 183-282. <http://dx.doi.org/10.1016/B978-0-444-53444-6.00002-X> [accessed 10.4.2013].
- Loeber, R.; Farrington, D.P. (2000). Young children who commit crime: epidemiology, developmental origins, risk factors, early interventions and policy implications. *Development and psychopathology*, December 2000, Vol. 12, No 4, pp. 737-762. <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=62545&next=true&jid=DPP&volumeld=12&issuelid=04> [accessed 10.4.2013].
- Lundborg, P. (2013). The health returns to schooling: what can we learn from twins? *Journal of population economics*, Vol. 26, No 2, pp. 673-701. <http://dx.doi.org/10.1007/s00148-012-0429-5> [accessed 10.4.2013].
- McMahon, W.C. (1997). Conceptual framework for measuring the total social and private benefits of education. *International journal of educational research*, Vol. 27, No 6, pp. 453-481.
- McMahon, W.C. (1998). Conceptual framework for the analysis of the social benefits of lifelong learning. *Education economics*, Vol. 6, No 3, pp. 309-346. <http://dx.doi.org/10.1080/09645299800000022> [accessed 10.4.2013].
- McMahon, W.C. (1999). *Education and development: measuring the social benefits*. Oxford: Oxford University Press.
- McMahon, W.C. (2004). The social and external benefits of education. In: Johnes, G.; Johnes, J. (eds). *International handbook of the economics of education*. Cheltenham: Edward Elgar.
- Meer, J. (2007). Evidence on the returns to secondary vocational education. *Economics of education review*, October 2007, Vol. 26, No 5, pp. 559-573. <http://dx.doi.org/10.1016/j.econedurev.2006.04.002> [accessed 10.4.2013].

- Moen, E.R.; Rosen, Å. (2004). Does poaching distort training? *Review of economic studies*, October 2004, Vol. 71, No 4, pp. 1143-1162.  
<http://dx.doi.org/10.1111/0034-6527.00317> [accessed 10.4.2013].
- Neuman, S.; Ziderman, A. (2003). Can vocational education improve the wages of minorities and disadvantaged groups? The case of Israel. *Economics of education review*, August 2003, Vol. 22, No 4, pp. 421-432. [http://dx.doi.org/10.1016/S0272-7757\(02\)00094-8](http://dx.doi.org/10.1016/S0272-7757(02)00094-8) [accessed 10.4.2013].
- OECD (2003). *OECD employment outlook 2003: towards more and better jobs*. Paris: OECD Publishing. [http://dx.doi.org/10.1787/empl\\_outlook-2003-en](http://dx.doi.org/10.1787/empl_outlook-2003-en) [accessed 10.4.2013].
- OECD (2009). *Education at a glance 2009: OECD indicators*. Paris: OECD Publishing.  
<http://www.oecdbookshop.org/oecd/display.asp?lang=en&sf1=DI&st1=5KSKJ4P0Q0KH> [accessed 10.4.2013].
- OECD (2010). *Learning for jobs*. Paris: OECD Publishing.  
<http://www.oecdbookshop.org/oecd/display.asp?sf1=identifiers&st1=9789264087460> [accessed 10.4.2013].
- OECD (2010). *Social capital, human capital and health: what is the evidence?* Paris: OECD Publishing.  
<http://www.oecdbookshop.org/oecd/display.asp?lang=en&sf1=DI&st1=5KSKJ4P0Q0KH> [accessed 10.4.2013].
- Oosterbeek, H.; Webbink, D. (2007). Wage effects of an extra year of basic vocational education. *Economics of education review*, August 2007, Vol. 26, No 4, pp. 408-419.  
<http://dx.doi.org/10.1016/j.econedurev.2006.07.013> [accessed 10.4.2013].
- Oreopoulos, P. (2007). Do dropouts drop out too soon? Wealth, health and happiness from compulsory schooling. *Journal of public economics*, Vol. 91, No 11-12, pp. 2213-2229.  
<http://dx.doi.org/10.1016/j.jpubeco.2007.02.002> [accessed 10.4.2013].
- Organ, D.W. et al. (2006). *Organisational citizenship behaviour: its nature, antecedents and consequences*. Thousand Oaks: Sage Publications.
- Osterman, P. (1995). Skill, training and work organisation in American establishments. *Industrial relations: a journal of economy and society*, April 1995, Vol. 34, No 2, pp. 125-146.  
<http://dx.doi.org/10.1111/j.1468-232X.1995.tb00365.x> [accessed 10.4.2013].

- Parsons, D.O. (1972). Specific human capital: an application to quit rates and layoff rates. *Journal of political economy*, November-December 1972, Vol. 80, No 6, pp. 1120-1143. <http://www.jstor.org/stable/1830213> [accessed 10.4.2013].
- Pfeffer, J. (1994). *Competitive advantage through people*. Boston: Harvard Business School Press.
- Pischke, J.-S. (2001). Continuous training in Germany. *Journal of population economics*, August 2001, Vol. 14, No 3, pp. 523-548. <http://dx.doi.org/10.1007/s001480000040> [accessed 10.4.2013].
- Pischke, J.-S.; von Wachter, T. (2008). Zero returns to compulsory schooling in Germany: evidence and interpretation. *Review of economics and statistics*, August 2008, Vol. 90, No 3, pp. 592-598. <http://dx.doi.org/10.1162/rest.90.3.592> [accessed 10.4.2013].
- Prahalad, C.K. (1983). Developing strategic capability: an agenda for top management. *Human resource management*, Vol. 22, No 3, pp. 237-254. <http://dx.doi.org/10.1002/hrm.3930220304> [accessed 10.4.2013].
- Preston, J.; Green, A. (2008). The role of vocational education and training in enhancing social inclusion and cohesion. In: Cedefop (ed.). *Modernising vocational education and training: fourth report on vocational training research in Europe: background report: Vol. 1*. Luxembourg: Publications Office. Cedefop Reference series; No 69-I, pp. 121-193. [http://www.cedefop.europa.eu/EN/Files/3050\\_en.pdf#](http://www.cedefop.europa.eu/EN/Files/3050_en.pdf#) [accessed 10.4.2013].
- Psacharopoulos, G.; Patrinos, H.A. (2004). Human capital and rates of returns. In: Johnes, G.; Johnes, J. (eds). *International handbook of the economics of education*. Cheltenham: Edward Elgar, pp.1-57.
- Putnam, R.D. (2000). *Bowling alone: the collapse and revival of American community*. New York: Simon and Schuster.
- Ramalingam, A.; Rauh, M.T. (2010). The firm as a socialisation device. *Management science*, December 2010, Vol. 56, No 12, pp. 2191-2206. <http://dx.doi.org/10.1287/mnsc.1100.1239> [accessed 10.4.2013].
- Saniter, N. (2012). *Estimating heterogeneous returns to education in Germany via conditional heteroskedasticity*. Berlin: German Institute for Economic Research. DIW discussion papers; No 1213. [www.diw.de/documents/publikationen/73/diw\\_01.c.401714.de/dp1213.pdf](http://www.diw.de/documents/publikationen/73/diw_01.c.401714.de/dp1213.pdf) [accessed 10.4.2013].
- Sarracino, F. (2010). Social capital and subjective wellbeing trends: comparing 11 western-European countries. *Journal of socio-economics*, August 2010, Vol. 39, No 4, pp. 482-517.

- <http://dx.doi.org/10.1016/j.socec.2009.10.010> [accessed 10.4.2013].
- Schnittker, J.; Behrman, J.R. (2012). Learning to do well or learning to do good? Estimating the effects of schooling on civic engagement, social cohesion, and labour market outcomes in the presence of endowments. *Social science research*, March 2012, Vol. 41, No 2, pp. 306-320. <http://dx.doi.org/10.1016/j.ssresearch.2011.11.010> [accessed 10.4.2013].
- Siebern-Thomas, F. (2005). Job quality in European labour markets. In: Bazen, S. et al. (eds). *Job quality and employer behaviour*. Basingstoke: Palgrave Macmillan, pp. 31-66.
- Simon, H.A. (1951). A formal theory of the employment relationship. *Econometrica*, July 1951, Vol. 19, No 3, pp. 293-305. <http://www.jstor.org/stable/1906815> [accessed 10.4.2013].
- Smith, A.; Hayton, G. (1999). What drives enterprise training? Evidence from Australia. *International journal of human resource management*, Vol. 10, No 2, pp. 251-272. <http://dx.doi.org/10.1080/095851999340549> [accessed 10.4.2013].
- Spitzmuller, M. et al. (2008). Organisational citizenship behaviour: a review and extension of its nomological network. In: Barling, J. et al. (eds). *The Sage handbook of organisational behaviour*. Thousand Oaks: Sage, pp. 106-123.
- Stowasser, T. et al. (2011). *Healthy, wealthy and wise? Revisited: an analysis of the causal pathways from socioeconomic status to health*. Cambridge, MA: National Bureau of Economic Research. NBER working paper; No 1723. <http://www.nber.org/papers/w17273> [accessed 10.4.2013].
- Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human resource management*, September/October 2009, Vol. 48, No 5, pp. 745-768. <http://dx.doi.org/10.1002/hrm.20315> [accessed 10.4.2013].
- Thang, N.N. et al. (2010). The relationship between training and firm performance: a literature review. *Research and practice in human resource management*, Vol. 18, No 1, pp. 28-45. <http://rphrm.curtin.edu.au/2010/issue1/training.html> [accessed 10.4.2013].
- Van Kippersluis, H. et al. (2011). Long run returns to education: does schooling lead to an extended old age? *Journal of human resources*, Fall 2011, Vol. 46, No 4, pp. 695-721. <http://jhr.uwpress.org/content/by/year> [accessed 10.4.2013].

- Veum, J.R. (1997). Training and job mobility among young workers in the United States. *Journal of population economics*, June 1997, Vol. 10, No 2, pp. 219-233.  
<http://link.springer.com/article/10.1007/s001480050039> [accessed 10.4.2013].
- Vila, L.E. (2000). The non-monetary benefits of education. *European journal of education*, March 2000, Vol. 35, No 1, pp. 21-32.  
<http://dx.doi.org/10.1111/1467-3435.00003> [accessed 10.4.2013].
- Vila, L.E. (2005). The outcomes of investment in education and people's wellbeing. *European journal of education*, March 2005, Vol. 40, No 1, pp. 3-11. <http://dx.doi.org/10.1111/j.1465-3435.2005.00206.x> [accessed 10.4.2013].
- Vohs, K.D. et al. (2006). The psychological consequences of money. *Science*, November 2006, Vol. 314, No 5802, pp. 1154-1156.  
<http://dx.doi.org/10.1126/science.1132491> [accessed 10.4.2013].
- von Middendorf, T. (2008). *Returns to education in Europe: detailed results from a harmonised survey*. Essen: RWI, Rhine-Westphalia Institute for Economic Research. Ruhr economic papers; No 65.  
[http://repec.rwi-essen.de/files/REP\\_08\\_065.pdf](http://repec.rwi-essen.de/files/REP_08_065.pdf) [accessed 10.4.2013].
- Weininger, E.B. (2005). Foundations of Pierre Bourdieu's class analysis. In: Wright, E.O. (ed.). *Approaches to class analysis*. Cambridge: Cambridge University Press. <http://www.scribd.com/doc/24293717/Chapter-4-Foundations-of-Pierre-Bourdieu%E2%80%99s-Class-Analysis> [accessed 10.4.2013].
- Wilkinson, R.; Pickett, K. (2010). *The spirit level: why equality is better for everyone*. London: Penguin Books.
- Wilson, R.A.; Briscoe, G. (2004). The impact of human capital on economic growth: a review. In: Cedefop et al. (eds). *Impact of education and training: third report on vocational training research in Europe: background report*. Luxembourg: Publications Office. Cedefop Reference series; No 54, pp. 9-70. [http://www.cedefop.europa.eu/EN/Files/3036\\_en.pdf](http://www.cedefop.europa.eu/EN/Files/3036_en.pdf) [accessed 10.4.2013].
- WMRO (2006). *Regional skills assessment 2006*. Birmingham: West Midlands Regional Observatory.
- Wolf, A. (2011). *Review of vocational education*. London: Department for Education.  
<https://www.education.gov.uk/publications/eOrderingDownload/The%20Wolf%20Report.pdf> [accessed 10.4.2013].

- Wolf, A. et al. (2006). Certifying the workforce: economic imperative or failed social policy. *Journal of education policy*, Vol. 21, No 5, pp. 535-565. <http://www.tandfonline.com/doi/pdf/10.1080/02680930600866124> [accessed 10.4.2013].
- Wolf, A.; Evans, K. (2011). *Improving literacy at work*. Abingdon: Routledge.
- Wright, P.M. et al. (1994). Human resources and sustained competitive advantage: a resource-based perspective. *International journal of human resource management*, Vol. 5, No 2, pp. 301-326. <http://dx.doi.org/10.1080/09585199400000020> [accessed 10.4.2013].
- Wright, P.M.; McMahan, G.C. (1992). Theoretical perspectives for strategic human resource management. *Journal of management*, June 1992, Vol. 18, No 2, pp. 295-320. <http://dx.doi.org/10.1177/014920639201800205> [accessed 10.4.2013].
- Zweimüller, J.; Winter-Ebmer, R. (2000). *Firm-specific training: consequences for job mobility*. Bonn: IZA, Institute for the Study of Labour. IZA discussion paper; No 138. <http://ftp.iza.org/dp138.pdf> [accessed 10.4.2013].
- Zwick, T. (2007). Apprenticeship training in Germany – Investment or productivity driven? *Zeitschrift für Arbeitsmarktforschung*, Vol. 40, No 2/3, pp. 193-204. [http://doku.iab.de/zaf/2007/2007\\_2-3\\_zaf\\_zwick.pdf](http://doku.iab.de/zaf/2007/2007_2-3_zaf_zwick.pdf) [accessed 10.4.2013].

## ANNEX

# Key terms and definitions

Key terms	Definitions
<b>Vocational education and training (VET)</b>	Education and training which aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly in the labour market (Cedefop, 2008).
<b>Lifelong learning</b>	All learning activity undertaken throughout life, which results in improving knowledge, know-how, skills, competences and/or qualifications for personal, social and/or professional reasons (Cedefop, 2008).
<b>Initial vocational education and training (IVET)</b>	Vocational education carried out in the initial education system, usually before entering working life. However, some training undertaken after entry into working life may be considered as initial training (e.g. retraining). IVET can be carried out at any level in vocational education (full-time school-based or alternance training) pathways or apprenticeship (Cedefop, 2008).
<b>Vocational education and training for unemployed (UVET)</b>	Vocational training targeted at the unemployed, registered as such with their respective national employment service and seeking employment opportunities.

Source: Prepared by the authors.







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This publication summarises Cedefop's work on benefits of vocational education and training (VET) contrasting, whenever possible, VET outcomes with those from general education.

The research spans how education and training generate their perceived benefits and looks at a wide range of outcomes some related to labour market success (employability and wages) others affecting quality of life and wellbeing (health, quality of participation in public life and satisfaction with life and leisure).

The analysis is extended to investigate VET's impact in organisations. It observes that organisations are communities with their own cultures. Consequently, VET's benefits in developing skills and influencing positively wellbeing and behaviour in the workplace can interact, directly and indirectly, to improve productivity, notable through greater cooperation. However, certain circumstances need to be in place to create this effect and maximise VET's benefits.

Interaction between VET's different benefits should also change the way investment in it is understood, if VET is to be a strategic tool for excellence and competitive advantage.

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